Computer Systems

Officers of the staff union TASS accused Burraughs of tising a supposed shortfall of orders as an excuse to push through a reorgani-sation which entails reducing staff. Labour MP Norman Hogg (East Dumbartonshire) cabled Bur-

roughs' new chairman Michael Blumenthal in the US protesting about the cutbacks and hes been nuceting UK management in Lon-John Imray, TASS convenor at

Cumbernauld, described the com-pany's redundancy offer as 'ridi-culous," and said he was pressing

Antiquated phones

BRITISH TELECOM'S new chairman George Jefferson last week echoed the fear of his predecessor Sir Willian Barlow, that borrowing limits imposed by the government on BT would retard the UK's progress in telecommu-

Our telephone network was among the most antiquated in Europe because auccessive governments had failed to allow investment In it, he told the Busicess Bernary Trode Association Equipment Trode Association. Last year investment was equivalent to £18 per head of population, compared with £51 in France, £36 in the US, £32 in Japan and £30 in

electronic office attack on the electronic office mar-nounced (CW, October 2), but is system that can incorporate a wide rango of Xerox word processors, hard discs, and non-Xerox oquip-

The 8000 Network System, as It is called, is basically a repackaging of the Ethernet communications scheme (CW, Junuary 3) with a new processor and a new low-cost laser printer added.

The 8000 processor is a proprietary 16-bit design with up to 512K-bytes of memory that can be used as a communications controlicr, as a printer servor, or as n file server. In a aniall configuration with only one processor it could

Pricing is complicated as soft-ware is unbrindled, but a basic file carry out all these functions.

The 8000 NS printer works xe-

Introducing the GEC Viewdata

4000 system and a viewdata bureau service, technical director Sir

Robert Clayton failed to explain why the company had taken so

long to marker its product.
Sir Robert said that GEC had

played a major role in the de-velopment of both teletext and viewdata. It had helped to unify

Ceefax and its IBA rival Otacle atandards and persuaded British Telecom to adopt the same standards for Pressel, launched in

March 1979.
GEC had produced black and

white teletext receivers in 1972 and colour ones two years later. By

At last, the GEC

viewdata launch

Winchester disc and \$28,000 with considerably cheaper. For \$16,635 a 58-megabyte disc. A basic it prints 12 pages a minute, fairly processor comes with 10 megabytea of fixed disc, a floppy disc slow compared to its existing rivals drive for loading programs, and a supervisory VDU; without softon the market but attractive because of the cost.

Any Xcrox 800 or 850 series

word processors, su long as they have communications facilities, will be able to be connected to the 8000 network. Hitherto only the Intost 860 model has been able to use Ethernet. The communicaother than with Ethornet, accordtions controller will allow links to other makes of word processors, and will provide apecifically Teletype, 2780, and 3270 protowill involve considerable invest-



Viewdata 4000 is aimed at the private user, costing £50,000 for an eight-port 30,000-page aystem with systema available for up to 150 ports and 100,000 pages, all on four to six months' delivery.

Telesoftware capability is said to be months rather than years away, but this involves terminal characteristics more than the system itself.

CLAY: "GEC pre-empted Ceefax" elalm.

The bureau service is available now at typical rates of £5,500 a year for 100 pages or £17,500 a year for 2,500 pages with printing done either locally or at the bureau.

Telecoms Council THE pressure group UKITO, UK Information Technology Organisation, has declined to oin the Telecommunications Council, the new association of pressure groups, because it feels subsidiaries of foreign companies, for example IBM,

predominate.

manufacturers.

UKITO

snubs

The Telecommunications

Users' Association has also de-

eided against joining, feeling it

is inappropriate for a general user association, which main-tains independence from

auppliera and government de-partmente alike, to join an asso-

ciation largely composed of

At the launch of tha Tele-

communications Council last wock, council chairman John Gorst MP said the TUA did not

subscribe to its aims of bringing about greater liberalisation of

elecommunications in the UK

out was more interested in

building a cosy relationably with Britisb Telecom. Gorat

was an early officer of the TUA's forerunner, the Telephone Uaera' Association.

Tesco PoS

'conjecture'

REPORTS that Tesco could be spending £100 million on PoS

equipment are "pure conjecture,"

according to Barry Grange, director for management services at

Britain'a largest supermarket

chain. "Across the group that is a decision for tomorrow rather than today," he added. "We're not

going into all our 600 stores until

we can make sure the decision is absolutely right."

Tesco has ordered £5 million

ware this costs \$12,000. A database management system a due to be added in six to eight months' time. The printer, which has a resolution of 300 dots to the inch, is not to be offered for use ing to current plans; this will recost since the rest of the network

First US ahipments are

Rohan Computing

DEC LA34 DEC VT100 Ex-slock Ring for price

cause of the govoroment's cash limits. Dr Dick Petriz, managing

director of Inmos, bas also been

appointed chairmao of the board.

THE Which Computer Show held at the National Exhibition Centre

in Birmingham last week, is to be-

como an annuol event, though the next will not be until January 1982. More than 23,000 visitors

wore attracted to the show, and there was no "trade only" restric-tion. Report page 9.

ICL has scored a modest victory

over the competition in the local

order for an ME29 system worth

£76,000 from West Sometset

District Council. The council,

which currently uses a Butroughs

L9 VRC, evaluated tenders from Burroughs, IBM, Univac and CMC, as well as from ICL.

COST saving from volume pro-

duction is the reason given by Quest Automation for a reduction

Quest reduction

One up to ICL

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Number 737

Thursday, December 11, 1980

Managayy

Charles Incas

RECEPTION

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Today's issue is the last

before Christmas. We at

Computer Weekly wish all our readers and advertis-

ers a very happy Christ-mas. We'll be back on De-

cember 31 and return to

our regular Thursday

date in the

would not pay £100,000 for PDP-11/34a to front-end the ICL host

and also because conversion to Emas was considered "traumatic".

ponse times on the 2980 as "hor-rendous", and work in many Uni-

versity departments is said to have been erippied by the inadequacy of

the interactive service. The new

"aeademic hardship"

Users have described the roa-

The system builders' compute

Argus700 Series 2.

FERRANTI Computer Systems

COLLAPSE OF CPP AND PRCI

(FIXED COST) TAIE-SHARING

timestar-theory Primi

had arrive offering unfinited compating for a fixed cost especially for accoming and marketing applications.

Peter Merrick

ASSOCIATIES

NEWS IN BRIEF Services Inmos adds to board FOUR non-executive directors, Sir William Barlow, Martin Har-ris, Peter Moody and John Saw. kill, have been appointed to the board of Inmos, the UK's sole microelectronics venture. They were nominated by the National Enterprise Board, which still holds a 70% stake in the company. Sir William Barlow, now chairman of Thorn EMI'a Engineering Group and a director of Royal Worcester, resigned as chairman of the Post Office last April because of the approximation. by slump

AS the recession bites, lay-offs by computer hardware manufacturers are being followed by euts in the services sector. Two major services companies, CAP-CPP and the US-based Flanaing Research Gerp, have announced the demise of major UK divisions and blamed the current economic climato.

ham and Bristol Willeh handled its commercial minicomputer systems business in the UK. Many of the PRC International staff affected

were taken on by the firm earlier this year after the demise of Gamma Associatea.

A question mark was raised over the future of CPP UK early this fear when Boole and Babbage took over marketing of its own software products, and Applied Data Re-taich extracted an agreement handing over UK marketing of ADR packages by the end of 1981. The handover process was accelerated when CAP-CPP started talking to prospective buyers for CPP and has culmloated in an anhothicement by ADR that nine people from CPP who sold ADR products will be joining ADR's UK operation on January 1.

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Meanwhile, CAP-CPP is carry-ing on talks with hardware PCMs prove, the product range de-voloped by CPP itself which so far has enjoyed only limited sales suc-cess. In the US only one customer for Improve has been picked up by rho. distributor there, Insac Products Inc (CW, November 27).

CAP-CPP has given notice to the 28 staff at IBM software products vendor, CPP UK, while PRC has axed 50 people at the silkes at Twickenham, Woking an investment at this stage."

Optimism

John Toups, proaldent of Planning Research Corp in the US, told Computer Weekly that PRC was very optimistic about the UK market in spring this year when a large part of the Gamma operation was acquired by the company. But he added, "Sales did not come up to expectations because of the poar state of the UK oconomy and I esn see no change for another 12 or 18 months. In the US no reductions have been needed yet in the minicomputer systems aide of our business."

The one part of the UK minicomputer operation being retained is the bureau and maintenance side based at Nottingham The engineering consultancy sec-Turn to page 10

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mens next month.

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pilification stages using field effect technology. The input transistor is an amplifier with a 0,04 to 1GHz has an original feature in its gate frequency range, and is intended for use in CATV receivers, parallel sub-gates, each 150

Siemens prediots that integra-tion levels will increase in the future as they did for silicon-based integrated circuits. By the end of 1981, Siemens hopes to have an ampilifer functioning at up to Turn to back page

Briefing

ICL thinks of appeal

ICL may appeal against a High Court decision ordering the company to provide Telecomputing with confidential documents referring to its marketing of the Oxford software house's TPS system, within 56 duys.

Telecomputing has stepped up its uriginal £2.5 million claim to more than £16 million and the case will be heard on October 26, 1981.

will be heard on October 26, 1981.

Hotel fire

A GROUP of IBM employees escaped unhurr from the fire that swept through the Stouffer Inn Hotel in New York City last week. The 26 dead included several menibers of the board of Arrow Electronies of Counecticut, described as the biggest distributor of electronic components in the world.

Robot scheme

A CO-OPERATIVE scheme to develop image rocognition capability for robots has been set up by the Science Rescarch Council and GEC Hurst Research Centre. The work will be carried out at Edin-burgh University using a Clip 4 array processor. SRC funding will be £80,000 over three years and GEC will contribute rather more in eash or technical assistance.

Viewdata adaptor

A VIEWDATA adaptor designed to sell for under £200 is to be man keted by London-based Zycor. Called Teledek 2000, the adaptor was designed around the NatSemi SC/MP microprocessor by J. Hempstead Associates, and received British Telecom appruval in May. A production agreement has been concluded with Sheffieldbesed manufacturer Greendale

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France makes major move into micros

FRANCE la to make a significant move into the business of manu-facturing microelectronics circuits next week when the first plant of Burotechnique in Aix-en-

He expected commerce and gov-

services or Prestel.

Provence, near Marseilles, is officially inaugurated.
The creation and progress of Eurotechnique, a joint venture between US company National Semiconductor (49%), and the Saint-Gobain Pont-A-Mousson group (51%), has been source on by holdings company Saint-Go-bain since it bought a 11% share in the Franch government-backed Compagnic des Machines Bull, the hrolding company for CII-Honeywell Bull. Saint-Gobain was also responsible for Machines Bull-brultes a 23 30% share in Olivate

buying a 23.3% share in Olivetti
earlier this year.

Eurotechnique is expected to be
manufacturing memories, in particular National'a 2147 4K static

60% of its production. About \$23 millioo (Pfr100 million) has been injected into the venture by the French state under a government funding scheme for independence of bigh technology industries

research and development.

Eurotechnique considers that the European market for MOS products should grow from about \$750 million this year to \$1.9 bil.

H-P launch

cular National's 2147 4K static RAM, microprocessors and tele-communications chips using MOS technology at a rate of 5,000 circuits a month in 1981 and 50,000 circuits a month in 1981 and 50,000 circuits a month by 1985. According to M. Jean-Lie Grand Clement, the company chairman, the joint venture will break even in 1982 and generate profits the year after.

His two main objectives are to capture 6% of the European market for MOS chips by 1984 and to build up apports within Europe to the Series III from 2 to 4 megabouts. HEWLETT-PACKARD has

called "Plan composants", In the agreement with National Semiconductor, Eurotechnique will have access to the company's NMOS technology, but will only be selling its own products. The ote i 1% of turnover to





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Oxford 2980 service collapse by the computing service depart-ment because the University

INTERACTIVE computing faciliconsigned to batch queues and any user found breaking these restric-tions would immediately be barred ties at Oxford were eut back dramatically this week because of drastic overloading on the University's ICL 2980, the machine originally considered more than adequate to run the service. A refrom using the aervice. The number of terminals aup-ported by the reduced interactive service during the day will be limited to 30 compared with 40 placement service based on three Digital Equipment VAX machines ordered by the University is not Users were told that a move to expected to start until the spring, and only then on a limited basis. VME/B version 5X37 might allow more MAC virtual machines, al-though this was considered far

Interactive users were told at a special mass meeting last week that

the use of MAC on the 2980 would be testricted from Monday, De-cember 8, to program editing and ahort Algol and Fortran compila-

Emas intersetive operating system ahould be adopted were rejected **Gallium circuit 'first'**

produced commercially by Sic-

applications and future satellite re-

Laboratories all over the world have been researching the rech-nology but only small quantities of military and telecoms spec devices have been released to date and gen-

THE first gallium arsenide-based clicuit will be integrated circuit will be produced commercially by Sie-cGY 21 is composed of two am-

from certain. Suggestions by users that Edioburgh University's

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the best scientific and industrial system? Networking ... Mide terrore Basic systems Data logging Remote terminal emulation Mathematical symutatic Intelligent committee eochysics mangyntance [| Teaching systems gnate song isna mon High level or low tavel languages, interpretent or complers; tully commissionly in fallod systems; number crunchers, data loggers, fectory controllers at just date processors — test pur products sophists any competition and measure the rount to yourseld.

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IPC Electrical Electronic Press Ltd, Ouedsont House, The Ouedreet, Suiton, Surrey SM2 BAQ. Telex: 892084 BISPRS O

Branch Offices: Birmingham: Lynton Huma, 202 Welsali Road, Burningham B42 IBA Telephone 021-358 4838

New York: 205 East 42nd Street, New York NY 10017, Tell (0181-217) 867 2080.

ic) IPC Business Press Ltd 198

Published weekly on Thuisday. Registered at the Post Office es a newspaper. Price per copy 25p.

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be contacted on 01-861 3500,
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COMPUTERVIEW

If the ways of gods and men are, as the Irish put it, strange indeed, there is even innre confusion about government funding for the computer industry.
The National Enterprise Board, the pub-

lie body with most experience and must funds invested in the computer industry, has lust most of its board of management in n series of well-publicised resignations over the past two weeks.

A similar exodus from ony private company handling the same level of investment would have eaused major upheavals in the Stock Exchange and the withdrawal of back-

Although the NEB's handling of the Fcrranti and ICL rescue operations was competently done, and the eventual sales of share stakes acquired in those two companies resulted in £50 million profits, the resignations will augment already grave doubts about the NEB's future in any public fund-

million investment from its proposed £25 million pool in a joint venture capital com-pany to be run by Jack Melchor, a successful venture financier from the United States. Some confusion has orisen over Melchor's

ing policy.
The NEB unnounced recently an initiol £2

mle. It is primerily to find an American

and manufactured here. (The role of finding egional companies and providing them with Briush "seedcorn" investment is allocated to the NEB's Manchester office.)

This £2 million sum is surely far too little too lste, and is being directed at the wrong people. It is too little because the sum is a drop in the occan compared to the £120 million put into the Very Large Scale Integrated Circuit project by the Japanese £55 million from government sources. And £2 million is miniscule compared to the £50 million the Japanese have since put into the related Software Development Project.

It is too Inte when set against the £4 million taken back from the National Research and Development Council in taxea carlier

But why is NEB money also being spent on American ideas? There are plenty of potenually lucrative British projects in search of money. To go to Califurnia in the monner

of the NEB is to show cunclusively that there is no British computer industry investment policy, only a series of imprompting

If the points needs reinforcing, listen to the National Economic Development Office's comments on the lack of a British policy for the microelectronic industry (see

What we have are five public or institutional bodies - the National Research and Development Corp, Finance For Industry, the NEB, the Industrial and Commercial Finance Corporation and the Department of Industry. Add to these any number of other quasi-government agencies offering finance to would-be industrialists, atir in some muddled thinking at the top, and is it any wonder that home-grown British ideas bring

home-grown employment so rarely?
The major difference between Eire and The major difference between Eire and the UK in all this is a body called the Industrial Development Authority. In the Republication of the UK computing industry.

lie, they have a single body, operate within a well-defined policy, which do with both inbound investment and load trepreneurs.

There is a 10-year tax holiday on capo for an approved project in the compa-for an approved project in the compa-inanufacturing area. Software products treated similarly, though the EEC Coma-sion has forced 10% tax to apply from ac-

ear. In addition, the Irish or foreign to preneur paya no personal tax on profinite
the project where tob creation and enough are involved. While the UK regional developer

authorities offer similar incentives, they on a far less generous scale, they lack clarity obout policy objectives which can terises the Irish effort. It is wrong also to dismiss Ireland's so

cess with disparaging comments and cheap inbour. Irish labour costs are not higher than those in the UK, and product ity gains from the new technology install under the generous grant incentive offeet by the IDA attracts much oversess most, patticularly American.

will they have time to do pro-

gramming as well as ther own

Sound pre-purchase emission

NEIL MOMELLAN

First Finnish mini reaches the UK

A FIRST for Finland in the UK market comes from Nokia, the paper pulp to cable conglomerate, with the launch of its Mikko well as to sell.

minicomputer last week. It is priced at between £15,000 and £25,000 complete with a basic accounting package.
The basic 16-bit machine, with

bit slice type central processor and separate universal device controlbr. has a main memory extendable to a half-niegabyte and is supplied with a full range of mainly Nokio manufactured peripherals. The software is parameter dri-

ven, but Nokia says it is prepared to customise it to suit customer

houses, Digital Equipment has in-troduced to the UK the practice of

authorising distributora, inaugu-

rated by DEC in the US about 18

months ago.

DEC expects up to eight of its

50 or more existing commercial

OEMs to become authorised by

the middle of next year. About 15%, more than 40, of the Ameri-

can installations are now

authorised although nearly twice

that number applied

unsuccessfully. DEC hopes that up to 80% of its OEMs will be

In Finland Nokia has some of

DEC seal of approval decision

was coming to the UK to learn as

He said that UK software was the best in the world and Nokia had used UK expertise to prepare the Mikko packages. Target sales for the Mikko series 3 in the UK next year are 18 to 20 units.

Nokia's arrival in the UK marketplace, which Wicksteds said was, after Sweden, the toughest in the world, extends to three the number of Seandinavian mini manufacturers operating in the UK. The company also owns 50% of British Tissue which dominates

Kurt Wickstedt, the Finnish the basic constituents of an inte-executive vice-president of Nokia's grated manufacturing operation. It

DEC will carry out a survey of

the OEM's customer base to assess

the quality of support provided and will ask its own sales, support

and credit personnel if a "profes-sional relationship" exists between

Approval for authorisation will

In returo, the authorised distri-

butor will enjoy certaio advantagea over other OEMa, including finan-

cial support for advertising and

have to be renegotiated annually.

DEC and the OEM



WICKSTEDT . . . "Coming to the UK to learn as well os to call."

makes its awn boards and has reroof where five office workers were cently bought an American chip and LSI circuit design group. The Mikko installed hase in rescord by the fire hrigade. Finland, concentrated in the bankthe evening rush hour.

A few minutes later, an anonying sector, numbers over 1,500 machines.

UK distributors by April 1981.

nonsihility fur the outbreak an behalf of the self-styled "Chodo" nuvement which was answerable already for a long catalogue of at-SPURRED on by the collapse of its profit, cash flow and funding satisfy the same criteria before actions of its leading OEM systems position before granting authorised status. Some tscks on computers. Clodo, a slang term fur 'tramp'', stands for Comite de

lowing the recent blaze at a contral

Paris office building owned by a

major insurance company.

Computers Itoused in the basement of a seven storey block near

the opera house were oudantaged

by the fire, which spread to the

Police evacuated 600 people

from the burning building during

mous telephone caller claimed res-

major OEMa like Olivetti are unlikely to need to seek authorisa-Liberation Ou de Detournement des Ordinateurs (committee for re-DEC intends to extend authorisation to OEMs in other European leasing or setting fire to compu-

ters).
The organisation first made newspaper headlines last April countries and expects to announce the names of the first authorised when it placed bombs at the Tou-

by Philips Informatique and CII-Honeywell Bull. FRENCH police are bracing themselves for a new wave of fire bomb attacks on computers fol-

There was no damage and Clodo made its involvement known by scrawling slogans proclaiming *On with computers". Chido emerged again on May 20 when it hurned down ICL's shop,

attacks. First, a ten-pound plastic bomb was left outside the wall of the huilding, failing to detonate. computers and confidential softagain in Toulouse. Computer ware was destroyed, police finding next day a one-foot deep hole wreckers remined to the attack in the same city on June 25 when they ransacked a hall which had bored in a wall, apparently for a heen prepared for an international

The raiders left hehind the message: "Scientist swine. No to capi-

future explosive charge.

Clado switched its attention hack to Toulouse on September 12 when three fires guited a computer

talist data processing".

CII-Honeywell Bull's centre at

Looveciennes, near Paris, was

singled out in August for a series of

Then a security door protecting

CIS-Cobol link for 8086

meroprocessor next month. The system is currently under demon-stration on Roxon Business Muchines' RX30 at Micro Focus' California base.

Implementation involves a previously-installed compiler element, but a new 8086 run time assembler system uses the segment

MICRO Focus will introduce CIS-Cobol for Intel's 8086 t6-bit memory space, permitting multi user system memory sharing.
CIS-Cobol version 4.3 is a Micro
Focus-developed ANSI 74 Cobol
compiler and run time system for

microcomputer and microproces-sor-based terminal systems certi-fied uniquety by the US Govern-

LETTERS to the EDITOR

Programmer's ideas for a new language

le Focus of November 27 you this idea in your columns and mention the oeeds for a new pro- invite both academics and comgramming lenguage project and the lack of enthusiasm with which their ideas about how such a forum

the lack of enthusiasm with which Ada has so far been greeted by DP in general; as have several other state of the art languages.

Do you think part of the problem is that most languages are created either by academics, who are mainly concerned with comprehensiveness and soundness of structure, or by professional DP men, who are more interested in practical applicability, and ease of use? I don't see how we can hope their ideas about how such a forum could be set up and what features the language to be designed might contails.

They say every programmer thinks he could design his own language. I don't, because I'm not an academic and I wouldn't know how to make it watertight. Like other programmers, however, I do have some vague ond unorganised ideas about what I'd like to see in the new language. I have outlined use? I don't see how we can hope to have a good up-to-date commercial DP language until the two slides get together in some sort of forum where their ideas could be

I wondered whether you would think it worthwhile to put forward

(name and address supplied)

OUTLINE SUGGESTIONS FOR A NEW COMMERCIAL DP PROGRAMMING LANGUAGE

THESE ideas are not put forward as esw or original, nor as precise specifications, but os features that punctising programmers might find useful.

In what follows, programmet—defined names are in upper case and keywords in lower case, though so precise syntax is intended.

The leaguage would be applicative and would be used to write a system rather thee isdividuol programs. Each statement would be a definition of the form X meass Y.

A possible classification of statement types would be:

1. Data type definitions (cf. Pascal).

a) Primary data (raw). Manually input into the system.

lementsry items, "MONTH means integer, range 1-12"

ii) Date structures,
"DATE means DAY," 1", MONTH, "1", YEAR!"
b) Derived data, Computed and output from system. An "I

b) Derived data. Computed and output from system. An "H" feature would be provided here.

"TAX means GROSS "O.3".

"NBT means GROSS — TAX".

2. Operational definitions, itsed to provide new operators.

"NEGATIVE means less-than 0".

"X MOD Y means X-(XY)" Y3" where the user having defined the function, could then used in his programs substituting any variables for X and Y. From a, set of also statements at "compiler" would generate validation and update software, perhaps interactive, to maintain asystem database, and a reporting and query facility to "harvest" that database. Much of this could be programmed to be user-friendly with the programmers doing the "hard" bits.

1984 and all that ...

CONTRIBUTIONS from readers are welcome for our column of the strange things people say about computers. We will pay £5 for each item

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Procuring, adding and ghacking to million words and 3,000 litestrations.

[for The New Grove Dictidiary of Music and Musicians) caused attiggering problems. Publication deadlines wate delayed at least two
years; some contributors were five years late. Computers too were
obstraperous At one point recalls Sadie, all articles beginning with U.

X. J. and O were deleted; Kwas lost for a while; and "Haydh made our
achiputer have a seizure."

Twelve pertinent questions for would-be purchasers

YOU have outlined the plight of a Mr Randall who has encountered difficulties during the acquisition of a Burroughs B80 machine (CW, March 13). Mr Randall has my sympathy. However, there is

No Irish joke

another aide to the case.

I find that would-be purchasera are all too often blissfully ignorant of the many problems that beset the unwary. They do not appreciale that there may be more than one solution to their needs. They imagine that because a particular item happens to sult an organisa-tion they know, it will sult them me put their fate in the hands of the sales representative others are happy to leave the choice to their staff — the "try them all and tell us which one you

The one thing they have in com-moe is that they tell me they have no need of an independent adviser, they are sufficiently well informed.

A few of the questions I would

ment?
What is it going to do? 3. Have you seen it performing this task?

THE EDITOR welcomes letters commanting on subjects published in Com-puter Weekly, or on original opics. All latters must be eccompanied by the writer's name and address, not necessarily for publica-

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4. What benefits will It confer? . ter", the change may cost you more than the whole insula

5. Are these benefits cost justi-6. Have you taken into account the likely running and maintenance costs?

II. Who is going to operate the equipment and what is the understudy?

.7. Have you considered the 12. future - eg can the equip-ment interface with computers/word processors/photoypesetters/telex etc?

you are buying a software package, what gitarontees are included? Do you know that hardware is

of equipment is essential if distant is to be avoided. cheap but softwore expensive? De you know that if you have a software package toilored to suit your system "even bet- Aylesbury

I. Why do you want this equip-

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publicity, and the right to use the DEC logo in promotional material. An OEM must present DEC Can they be spared to go to training course? If it involve DEC atreased that OEMs colwith its last two years' trading figures so that DEC can check on they be able to absorb it? has **Councils co-operate**

AS part of a major co-operative works octivities and show a profit stature to develop a standard on them from April 1, 1981. system for management and ac- Direct works are those carried out counts io their direct works de-partments, more than 140 local authorities in England and Wales are each contributing up to £1,800 to pay Logica and Price Waterhouse to prepare a func-

tional specification Logics says it is collaborating with Price Waterhouse because of the latter's experience in local authority accounting. Apart from the Chartered Institute of Public Finance and Accounting, which gave them the contract, the two. firms ought also to thank the government. The Local Government Planning and Land Act 1980 re-

by personnel employed directly by

a local authority.

As well as having to complete the functional specification by the cite of March 1981, Logica will also have to have strategies drawn up that will enable different types of local authority to implement the

Job fears

COMPANIES are using the recession as an excuse for aacking staff and then bringing in new tech-nology to replace them. So claims the clerical union Apex, which is Quires local authorlues to produce predicting 500,000 job loases produce separate accounts for their direct duced by new technology by 1983.

300 delivers

The productivity advances of IBM's new System /38 are being confirmed in early installations.

OI-940-9548.

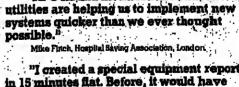


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IBM has started delivering System/38s...

And customers have started delivering

"RPG III and the interactive data base

taken a day and a half of programming,"

Chuck Peter, Data Proceeing Manager, Road Machiner, and Supplies Company. Missesticils. "We've developed an online order entry system with one-third the effort and the application is much more polishe We're very pleased."

Lerry Sterner, Director, Corpora Services, United Merchants and Manufa

to customers.

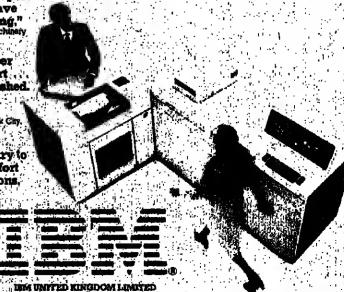
comments like these to IBM:

"The System/38 significantly reduced the amount of code necessary t write a program and the time and effor required to move into new applications We're extremely enthusiastic."

Larry Petterson, Director of Data F St. Olsi College, Northfield, Minnanda



And we're snthusiastic, loo. Because our new System/38 is a compact sysism with advanced features rarsly found in any computer, large or small. In short, System/38 delivers. And it can deliver for you For more information call Jim Foster on



Downtime

Those bleeps from Outer Space

Invaders games, the strict instruc-tions that they must not be ployed On the other hand, let's admit

nearly crazy by the youth sitting aren't they?
next to him in the plane, whose
Justify it by thinking haw those

11"S that time of year again. Now earphone socket. Of course that he lannest — how many of you are might make people think the beeps going to include with presents for were not actually necessary, your children of hand-held Space You've got to have some way of

in public?

Id Feigenbaum, of Stanford buy ourselves a home computer University, flew over here for the Inforcech Review, and was driven ottracted to busmen's holidays,

heeping noises did not stop once of its with jobs have got to keep the during the entire flight. velocity of circulation of money I think I will suggest to the up. Till after our Christmas break, makers that they incurporote an Joyenx Noel.



applaud the suggestion that the answer to all our problems, but I would not expect to see charging the headquarters of NATO's giant economy size "bang bang you're dead" exer-clae, and their banner was all organisations that are supposed to be impressing us with their technical acumen taking the course that Britial Rail is curabout a computer, would you ently pursuing.

belleve. Something about The other evening I apent : "Your computer against oura".
I've heard of computer simulations of World War III but I delightful 50 minutes sitting in a stationary train outside Balham, immobilised, I understond, by never knew that the German Communiat Party had partlei-"leaves on the line". Now what steps do you

suppose BR is taking to deal with this problem? It has put up posters in various Southern Re-It would, of course, be a great idea for the American and Russian computers to fight out the gion stationa that read: war between them, leaving us humans to get on with more Leaf! Leaf! Go away! Fall again another way. Drop in the fields — that would constructive things. But what would hoppen if the computers

British Rail's ode to autumn leaves me . . . stranded

> Or we'll have you As residue

- crushed upon the rails -And wheels will spin To show the state you've got us

I suppose we should be open minded about this, and wait for the figures to see whether this ode actually dissuodes any leaves from falling on the track. After all, I keep being reminded of Uri Geller, astrology, "There are more things in Hesven and earth,

Why should they try using boring old technology to deal with the leaves? Still, I shall get worried if BR starts using the same technique to try to acive all ita other problems. "Signalal Sig-nals! Do not fail!" "Wheel

bearings! Do not wear out!"
Maybe this is a seasonal syndrome, unknown to those of us who work in heated offices. At this time of year British Rail management turn brown and shrivel and fall to the ground.
(The passengers do this every

time the fares go up.)
Come spring Sir Peter Parker's merry men will blossom forth into their usual technology-tour-ing selves, with more plans for 125 mph trains that run at 60 mph trains that run at 6 mph, and so on.

Red Indians from Saskatchewan is being imported to do a reverse rain dance all winter to keep the snow off the points. BR's a vanced technology group from Derby are planning to digitise this for use in following years, but I fear they will run into software copywright problems.

MICHIE'S PRIVATEVIEW

The physics text book is a fraud

want to predict things. Actually it was developed for another purpose: to help physicists to clarify their minda.

Euclid's geometry is bad

enough. We were all at some time coaxed, bamboozled or licrded through it. But at least when auswers can be derived from the axioms and data (they can't always)
they come quite quickly. There is
no fear of having to drop the whole
project on finding the required
chains of calculation and inference to be too loog to execute in

Dream

With physics, ooce we leave cooked-up classroom problems for the rest world, the matter atsads differently. If some physicist disagrees, let him write a program to control a robot monacyclist. He will thereby discover the heuristic adequacy problem. In general his case is even worse. The physics text also fails on epistemological adequacy (see McCarthy & Hayes, 1969, for these terms).

Euclid was for many of us a first climate of the second second

glimpse of an enchanted world of order, completeness, consistency, harmony, without ambiguity, fuss or fuzz. Every statement is either true or false, and if true then provable from the axioms. Around this dream of perfection were as-sembled the philosophies of the

So if the glimpsed scene turns out to be not what it seems, what then? A new viewing point sometimes aids restoration of a fractured scene by placing it in an enlarged perspective. As each new

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Greek world, and a very great nui-sance they eventually became. Almost two mileols after Plato, it most two mileols after Plato, it make free of ideal Euclidean forms, Pinally despairing, he decided to make the platon of t cided to go for a more feasible model of planetary motion; and thus opened the doors of computa-

Vantage point

get out your geometry books and prove it? Peter, Hilton of Case Western Reserve University assures me that you cannot. The notion that a closure (line round which a bug could run for ever) partitions the plane into just two sets of points - "inside" and 'outside" and that passage from one partition into the other cannot be achieved without eross. ng the boundary, is not embedded even implicitly in the sxioms, although it is in elementary set theory. But in the edifice, set theory is housed on a higher storey than Buclidean plane geometry.

Monkey

floor is added to the edifice of

To illustrate, let us draw a

triangle, any triangle at all (see figure 1). The dotted line dissects

dicated by the dotted arrow, must

t necessarily intersect the line BC?

Of course it must! But can you

lier structures.

Returning to physics, consider's warehouse, robot hamed Monkey who has been saked to fetch a toolwho has been ssked to fetch a toolkit (for some reason code-named Bahanas). The latter is suspended high above the floor by a string, beyond Monkey's reach. In a corner stands a pair of garden sheara with long handles, long enough for Monkey to be able to teach the string with the blades. What does Monkey, or Monkey's keeper, need to know about this little world in order to calculate a plan of action? How much of the needed knowledge can be find in the physics texts?

Physics might tell him quite a



Professor Doneld Michie is head of the Machine intelligence Research Unit at Edinburgh Uni-

few things he didn't want to know, like the terminal velocity of Bananas if the supporting string had somehow been cut, or the heat generated on impact. On the general problem of situotions, actions and causal laws, the physics text reveals itself to Monkey as a fraud.

Ghosts

In a later Privateview we return science, a vantage point is pro-vided from which to view the cracks and gaps of lower and car-Monkey. Meanwhile the reader msy wish to glance at P. J. Hayes' Systems and the Micro-electronics Age, Edinburgh University Press, 1979). Just as some ancient Greek, aware of the gappiness and ridicu-lously small scope of Buclid, might the angle BAC into two compo-nents BAD and DAC. If the line AD is produced indefinitely as inhave put out an exploratory probe into the unknown calculus of sets; so today the first approaches are being tried to tomorrow's calculus

The ghosts of the geometers watted more than 2,000 years. Industrial robot technology, if nothing else, will this time ensure a faster pace.

Bonald Tilie

McCarthy and P. J. Hayes (1969).
Some philosophical problems from the standpoint of artificial intelligence, to Machine Intelligence, to Machine Intelligence, to Machine Intelligence, 4 (eds., B. Meltzer and D. Michie) pp. 463.
502. Hdinburgh: Edinburgh University Press.

TEN YEARS AGO

From Computer Weekly of December 10,1970.

RESIDENTS of Watford, Bromley, Croydon and Paddington heve been cast he "guines piga" by the Post Office in a unique experiment using computarized records attored on a master file to tackle the persistent problem posed by televisinn and licence of Science and Technnlogy has insufficiently physiology department has an inquirised a new interactive Fortran tracing system which he claims will prove invaluable as a low cost and effective teaching has ald CAP (Europe) has the college.

FOCUS

Christmas countdown

not well. After last year's Datatale ager had cooked the books and booked a Laker flight, taking the installation manuals and the dishy blonde marketing assistant Sue. Subsequent information retrie-val ransom had taken much soul

and cash aestching. Never very lavish, the Dataland installation budget had to be diverted to funding the return of the manuals -

As a result of budget depriva-tions, the installation had to make do and mend, with emphasis on mending; in fact, much of the year had been spent IBM-watching.

Approaches had heen made to King Digitus Prolificus for an sllocation of next year's bud-Alas, the response had not The rosal soffers were at fragal

as a personal computer operating manual or the site engineer's tool-kit. Ducal priorities were more involved in building a sauna and gymnasium in the new palace.

Measured tone Of course, all this did not help

the DP team who were working in a D and A (down and out) mode. Once again, our hero the DPM approached the royal ruler. In a measured tone, he informed the King that the whole DP system

was about to do down the tube The timing was unfortunate as a new computerised tax system was obout to be announced. This involved a special levy on all types of printed and design information, whether TV programmes, corn-

flake packages or posters.

DPM was advised to keep his tapes spinning or face the alterna-tive, a well-placed Ducal boot. This being a practical datatale, there was no magic slipper, bean or fairy godmother to hand.

to the new sauns.

Once again; the moral of the Christmas Datafale is clear. Those who offer a helping hand are likely to end up chastened.

out, tapes running down and site engineers running off. Not only that, but time was running short.

The local edition of the Computer Users' Year Book had listed the

installation within black borders and even peripheral supplief so-rage Technology had removed a from their client reference us. The local IBM salesman had asked for a posting to Putney or Swan-

Open day

Nigel, the systems manager, made the only practical sugges-tion. "Why don't we stage an open an entrance fee and earn possit extra revenues."

Nigel suggested that the VDU could be converted to Atari mode, featuring Star Wars, Space I makers and a rigged version of backgammon. WP manager Karen could process words on densaid at cut-price rates while the printer could produce individual hotogrouses and welcome messages on scopes and welcome messages of

As in all well-structured data-tales, help was at hand. Secretary Di, whose talents were more note

in such areas as the site storemon and archives, startled all present by saying she had an idea.

Apparently, she had heard of a successful attempt to interface with a giant banking computer network. All that was required was network.

High hopes

Next day, DPM warily approached King DP who was pointedly swinging a large bodencased leg. Sire, he reported, all is well, thanks to Di.

is well, thanks to Di.

Revenues were now flowing se would be tourists. The Thomas Cook database had also been intercepted and the Royal palace was

tercepted and the Royal palace
on the package tour list.
The team was now working on
Electronic Fund Transfer and
there were high hopes that shortly
some funds (electronic of
otherwise) would be transferred to
the Ducal opfiers.
Good news, said King DP. "As
a gesture; I'll rescind the informstion tak and allocate funds for pur
chasing a new telex inschine, in
the meantime, we would per
sonally reward Dl. Have her report
to the new sauns."

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Organisation

Builder's £25,000 program rewrite nightmare

of programs costing £2,500 only fuor years ago may have to be rewritten at a likely price

But there

firm bought its Kienzle 6000 as aomething of an innovation seven years ago but deteriorating hardware means it must be replaced.
The Kienzle was bought from Northampton-based distributor MBM which went

hankrupt and was taken over by Systime in January 1979. Although Systime maintained a previous service contract for a short while, the firm gave notice of termination later.

MP gains

time for

Info Bill

at the General Election.

Hooley has wou third place in this ballot for private members'

Bills and has an outside chance of

gnining adequate parliamentary

A Freedom of Information Act

would force the Civil Service to

reveal all government files for

public view, with certain specific

exceptiona dealing with law en-

forcement and the privacy of third .

parties. The new Bill differs from

Wilson recognises that Nurthover, with a 500,000 annual turnover, needs to buy a linvoices must be broken down into items, so that if it emmes to a dispute we know exactly small numbers of very complex records — - an enforced upgrade entailing expensive custom software rewriting - faces Flert- more sophisticated machine, possibly with what we've talking about " invoices must be broken down into items, so that if it entrees to a dispute we know exactly with the sophisticated machine, possibly with the sophisticated machine, and the sophisticated mac more sophisticated machine, possibly with fordshire builders Northover Broa. A suite multi-programming and distributed data

But there is a major complication as MBM also supplied the software written in Assem-Company secretary Juhn Wilson says the bler and Wilson envisages: "The frightening prospect uf having to rewrite to a new

The original software worked very well, giving Northover contracting and costing routines complete with proper audit trail.
"We need a system of accounting that the customer can understand," says Wilson.

"It is oo use having a total figure, or an

what we're talking about.

Northover won a court case against a cus-tomer trying to evade payment through auch temisstion. Wilson observes: "Several other builders who didn't have our chapter and verse came unstuck and lost a packet.

Wilson approached Systime in May 1979 and suggested a program rewrite but the packages - payroll and similar

Wilson has also been round most of the exhibitions and agen the larger companies

just the sort of thing they say not to computense. But our previous package worked so well that I could extract a simultaneous invoice and costing record in seconds. And that's what I'm looking for again."

His best leads to date have atemmed from last month's Compec, where he renewed contact with Systime.

Whichever way he looks, Wilson's Kienzle replacement will cost him too much. "The building business is wide open to computers," he says firmly. "But the computer industry will have to pull itself



THESE operators nil work for Barcisys Bank. They were removed from their usual aurroundings to help farmers visiting the annual Smithfield Show last weak work out the profit and loss on their machinery leasing and farming operations. The form financial models were run in real time at the show from IBM's CALL survice in Basinghall Street, London. Over 750 farmers used the service during the four-day show.

US 'right to know' policy BACKBENCH MP Frank Hooley (Lab, Sheffield Hedley) is reviving the push for a Freedam of Information law by adopting the Outer Circle Policy Unit's draft Bill, similar to that proposed by Clemant Freud and lost at the General Richard and lost at the Richard and lost at the Richard and l

reasunably certain of continuing when Ronald Reagan's administra-

tion takes office next month. This prediction appears reasonable despite the departure of National Telecommunications and Information Administration head Henry Geller and his deputy Ed

There is no present indication of their replacements but Republican reaction in Congress to the NTIA's recent telecommunications and privacy bills has been positive and leads Geller to believe there will be continuity of policy.
It is normal United States

Freud's (CW, April 5, 1979)
msinly in a clause giving data
subjects the right of appeal to the
Ombudaman over errors in files and revamping the second part, practice for agency heada and their deputies to be replaced when the which replaces the nxlating Official Secreta Act.
This latter is modelled on the presidency changes, even with or-ganisations as small by US standards as the NTIA with 325 staff.

Conservative government's own proposala but with reduced cove-In any case, Geller is well known rage and power given to courta instead of ministers. as a liberal Democrat and odmits that "there has not been a lot of

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aformating science and text pro-

structing a national information policy along the lines he set out twn years ago (CW, Februory 15,

Exceptions to this general rule lie in the fields of privacy and de-

privacy Bills pending, four dealing with records - insurance, medicine, Federal bealth research and electronic funds transfer.

Termed the Fair Information Privacy Practicea Bill, the fifth would greatly extend the provi-sions of existing credit laws to eover cheque authorisation and compel provision of more readily obtainable information to the con-

The NTIA's Communications Bill was intended to tackle problems caused by converging technology, such as AT&T cross-subsidising data processing ser-

A lawyer by training, Geller be-lieves passionately in the need to protect individuals from the effects of advancing technology and to redress the balance," an iasue he hopes to pursue in a future aca-

regulation of telecommunications.

There are now five unfinished

vices, and to promote competition.

guarantee but not

H-P uptime

IN the US and the rest of Europe an important part of the sales pitch on Hewlett-Packard's new Series 44 HP3000 minicomputer is an option to insure for 99% uptime. 8_{if} a aimilar guarantee is not to be offered in the UK.

The UK's western area computer manager, Martio Davey, syr.
"We would like to wair some months, before launching that facet. Maybe we're taking too conservative a stance, but we need a little more experience with remote diagnostics over PO lines,"

However, Heinz Blaesser, general manager of computer me keting responsible for European sales and support as a whole, says.
"Our intention is to provide the same level of service on our side of the Atlantic as is provided in the States." He will decentralise regional support centres to bring remote diagnostics as close to the customer aa possible.

The insurance (or guarantee as Blaesser calls it), where available, will cover CPU, main memory and discs and will be priced at less than 10% over the overall purchase

It depends on customers meeting several conditions: A representative must remain on she while any repairs are earried out; so operator will have to have been sent on an HP training course; and there will have to be PO approval for modem connection. The scheme will operate in the US from Pebruary 1, 1981.

Increased confidence in the Series 44 is based on sewell hardware improvements. These include a reduced chip count on memory boards and a control tex maintenance microcomputer system mounted in the 44's power cage, Based on an in-bouse 16-bit mictu known as the MC5, it selftests the CPU and provides remote diagnostica through HP's Remote Systam Verification Program, RSVP.

Lisp software launch

Cootrol Data is to be an early customer for two machines from LMI and wants to invest in the company. Texas Instruments is also buying two machines.

of processor power and to be good their power.

LISP software, with processors defor manipulating large quantities signed specifically to run It, is to be launched early next year by two new Los Angeles companies, Symbolics and Lisp Machines Inc. large mainframe to run in.

Liap is said to make efficient use price over the next 18 months while at the same time tripling

Training for sales career

INSIGHT Marketing and Personnel Consultants, IMPC, the London-based sales and marketing recruitment agency, is starting a monthly series of one-week residential training courses. Catefing for existing computer staff wishing to become salespeople, the first course will start on January 19 at

mere.

Groups containing up to 12 students will be placed in jobs prior to and drugs "library" scheme claim which will be absorbed into could be made and later, savings of IMPC's standard recruiting that

- and it plans to halve the

lng system - the price of a large mini - and it plans to halve the

LMI's first machines are priced at \$160,000 including the operst-

IMPC's standard recruiting fees.

The course is designed "bridge the gap between people who want to sell and companies who want sales people."

Economy on drugs

A SCHEME to save £50,000 a year by reducing drug stocks was due to

that a one-off saving of £50,000 could be made and later, savings of £50,000-£70,000 a year.

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Banks look to a mix of telecoms and computers

BANKS are looking increasingly to a mixture of telecommunications and computers to solve the problem of rooving money around. This emerged when over 90 bankers from 14 countries gathered for a recent Infotech conference in London to consider the state of the art in relation to billion cheques being written in electronic fund transfers and to the US this year. This volume state of the art in relation to uke a cautious peep into future

developments.
Logica's commercial division manager, Chris Rees, established a onference keynote when he deacribed banks as "pioneers in the computer networking field . . . fien despite themselves". Rees said that banks predicted

in the late 1960s "significant business growth coupled with continuing wage inflation."

As banks are labour-intensive, this growth would be both costly

and upprofitable to support.

The computer industry available with hardware and softwere technology to support major networks, using existing PTTsupplied voice grade lines.

International Swift, Chips and Fedware developed from that ini-tial point in the United States, Ida being developed in Scandinavia.
Stephen Earnst, from the Bank of America, explained that 94% of

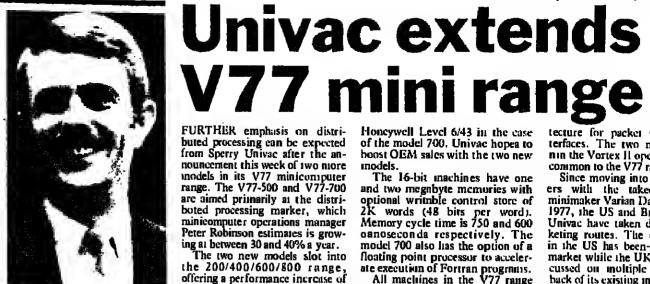
American households possess cheque book accounts, a total of 37.1 posed enormous problems for American cleaning banks.

Ubiquitous

So far, there are 32 different American automated clearing houses and the ubiquitous credit card, by producing all these payment authorisations, increased rather than diminished paper-

It might appear like a paperless whole was that banks will form the society to the consumer, but second largest market after milipeople in the rear offices of banks

Summarizing, Earnst envisaged an increasing effort by American electronic fund transfer.



EARNST . . . Papariass sociaty ha-

banks to introduce truncated cheque handling techniques which he foresaw as maintaining a dominant position as a method of payments for some time to come,

A point emerging clearly both from the conference hall and from activity within the industry as a tary requirements for computer Most of that money will be spent

on networks connected with breakdown" cover.

FURTHER emphasis on distributed processing can be expected from Sperry Univac after the announcement this week of two more nodels in its V77 minicomputer range. The V77-500 and V77-700

The 16-bit machines have one and two megnbyte memories with optional writible control store of 2K words (48 bits per word). Memory cycle time is 750 and 600 minicomputer operations manager Peter Robinson estimates is growoanoseconda respectively. The model 700 also has the option of a floating point processor to accelerate execution of Fortran programs.

offering a performance increase of All machines in the V77 range about 30% uver the next model are fully software compatible and allow field upgrading. They are also compatible with Univac's net-They compete with the DEC PDP-11/34 and Data General working suftware, including Eclipse C/150 in the case of the model 500, and with the PDP has systems and the company's l1/44. Eclipse C/350 and distributed enumunications archi-

boted processing marker, which

ing at between 30 and 40% a year.

down, according to Univac.

common to the V77 range. Since moving into minicomput ers with the takeover of US minimaker Varian Data Systems in 1977, the US and British arms of

Univac have taken different mar keting routes. The concentration in the US has been on the OEN market while the UK company foback of its existing mainframe user The UK minicomputer division

is more profitable than its US counterpart as a result, snys Some 75% of V77 sales in the

Brokers offer cover against computer misuse

COVER against computer misuse and loss of data can be included in policies now offered by Barron (Insurance Brokers) uf New Street, which the computer is located. Also covered is failure of the pub-Birmingham, The company says lic electricity supply. that its policies go well beyond the traditional "material damage and

But particularly interesting is the cover available for luss from Barron's policies indemnify its the accidental or malicious craor dishonest program manipula tion and/or suppression, alteration or insertion of data or data carrying materials. Legal liability to third parties arising from compu-

Atkins-LUCS merger completed

A CAUTIOUS approach to expansion in the rest of Europe is being executives. Chandler himself was adopted by United Computing. This is the name just announced for the organisation that combines pulpg Systems and Atkins On-line, a computing services group-ing that has chalked up a turnover of more thao £7 million this year.
Atkins On-Line and LUCS were

brought together in 1979 when the LUCS parent company in the US, United Telecom of Kansas City, took over Atkins' parent, Ou-Line Systems of Pittsburg.
Denois Chandler, managing

director of United Computing, re-

managing director.

The board is currently based at

the former Atkina On-Line centre the forces of London United Com-pulling Systems and Atkins On-former LUCS offices at Leonard Street in the City is being consid-

United Computing provides about 10% of the turnover of United Information Systems, the organisation that embraces all the data processing interests of United Telecom. They include Kansas City-based United Computing Systema, which runs a Cray

The Cray can be accessed via the ards the acquisition as a takcover UK operation, substantially in reverse as far as the UK is con-cerned because five out of the six members of the United Computing computer services business.

UK data protection laws delayed

PRESSURE of other work has new year with penal issues and has made it unlikely that the House of not decided on its next investigamade it unlikely that the House of moves towards implementing data projection laws, despite pressure from the Council of Europe.

The select Committee on Home ffairs has noted the time Home Office officials spent considering the Lindop Report on Data Proection but has not had a chance to investigate the issues, committee chairman Sir Graham Page (Con, Crosby) told Computer Weekly.

Home Secretary William White-

law has promised a pre-Christmas statement and the government seems reconciled to meeting the Council of Europe requirements embodied in the latter's data pro-A Home-Office proposal for-

Data Protection Bill is understood to be uoder consideration by the goveroment. Defails are not known, except that, as expected, Lindop is only one of several they do not involve the setting up of a Data Protection Authority.

Report on Home Office Reports published on December 10.

According to the several they do not involve the setting up of a Data Protection Authority.

There is doubt in some civil servants minds whether the proposition of the proposition o According to Page, the committee will be occupied fully until the of the Council of Europe.

lime-slot service extended

TIME SLOT, the personal in the number of employees. The foliation service, has been expayroll service is extra. The offer includes unlimited access to the citatomer's own information data. Sociates is offering the service for 1000, and supply of a VDU and 150 to 1500 a week depending on printer at his own site.

Prestel printing trial THE paper and printing industries firms in a two-month trial spon-are to use one of the electronic sored by the magazine Paper Pacts media which may eventually see and Figures. The magazine's data-him of this month Presel ter-base on Prestel shows pride changes are to be installed at 50 offers for paper and board pro-paper merchants and 50 printing ducts. SYSPAK/70.

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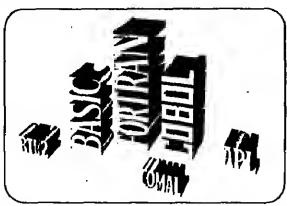
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SOFTWARE FILE



MINORITY LANGUAGES

Any programmer looking for an up-end-coming language to learn, or DP manager considering a new tool for a perticular job, is faced with a bewildering variety. A range of appecialist and general-purpose languages has grown up to match new akills and refine old ness, as the computer infiltrates ever-widening

spherea of spptication.

Commercially, Cobol, Basic, Fortren, and mure recontly Pascass at III rule, but their heirs are to be found in a new goneretinn which builds on the leasons learnt in the lest 15 years. In this end the next two issues, Softwere File will be eampling a few of these "ininority isngusges" and handing over to experte in them to experte in them to expert in their particular charms and virtues.

This week JOHN BARNES, who originelly invented RTL/2 to cops with real time processes, explains the beckground and uses

Jain Barnes is director of lenguage research et SPL's Abing-don Research Centre end a member of the Lenguage Design Team involved in the new US defence language Ade.



DURING the 70s the price of figuration of 48K words god a me- RTL/2 was written in January gabyte of fixed disc or drum.

Experience from the use of RTL/1 was fed into the design of RTL/2. Perhaps the biggest item of input was that the range of target configurations had changed dramadcally; down to 8K coreand as a result there hes been an explosion in the demand for soft-ware. This demand was foreseen at ICI, and s five-year project started RTL/2, a high-level programming

A prototype, naturally known as RTL/1, was in use in 1970. Based upon Algol 60 but with several additional features additional features including a existing fields of use. As a consemerchanism for the online replacement of program sections, it was

MPS 3021-one of a new generation of

microprocessor-controlled modema for full

duplex asynchronous oparetion up to 300 bit/s

over 2-wire dtal-up or leased circuits. Fully V21

pair cables at apeeds up to 9600 bit/e.

19,200 bit/s over twisted pair cables.

ALD-1-an asynchronous line driver providing

SLD-1-a aynchronous line driver for short-haul,

abort-haul, point-to-point operations over twisted

point-lo-point or multidrop use at speeds up to

These were constructed using technique. Both contain a common front-end which converts RTL/2

small applications rather than the more lavish use of hardware in

language; this is then followed by a back end or code generator which converts the intermediate language into the appropriate object code. This technique simplifies compiler portability and helps tn en-

These two early compilers both ran on the System 4. The compiler for the PDP-11 was n cross-complier from which the object programs had to be transferred onto the PDP-11 on yards and yards of paper tape, the target machines being far too small to support a compiler.

The language was changed very slightly during 1972 and 1973 in order to remove dead wood and

order to remove dead wood and reduce the compiler size. It was frozen at the end of 1973. During this period some 20 process control this period same 20 process control applications were programmed in RTL/2. This also required the writing of a range of operating systems known as MTS, themselves written in RTL/2. All the target machines were PDP-11a; the System 4 and various HBM. 360/370s were used for cross-compilation.

Control

The success of RTL/2 in ICI resulted in its being made commercially available through SPL international in April 1974, and since then it has gooe from strength to strength. More than 20 new implementations have been written, and without exception all have incorporated the same stenhave incorporated the same stan-dard front-end. In addition, support packages have been decan be run under various operating systems. In the case of the ever popular PDP-11, most users ruo

RTL/2 under RSX-11M. Perhaps one of the most impor-tant technical aspects of RTL/2 is hat it recognises the need for features aimed at 'programming in the large'. It allows a program to be developed in individual separately compiled modules and gives the user control over visibility be-

tween the modules.

The implementations also allow hese interfaces to be checked so that, for example, a procedure with two parameters in one module is not called with only one parameter from another module, in these respects RTL/2 is far superior to Pascal, which was designed as a teaching tool and is really only suitable for small programs.

programs,
At a lower level, RTL/2 provides an appropriate range of data
types and structures. The basic types include bytes (or characters), integers, fractions (for fixed point machines) and resis. Data structures include arrays, records and typed references. The Algol 68 style record structures give RTL/2 a hig advantage over its old rival Coral 66, with its ad hoc tables and dangerous anonymous references.
Other data types are aimed at giving the user control over error



recovery (or exception handling, a young Ada calls it), 1/0 chand selection and task control, It gos without saying that being designed for real time applications, RIM naturally supports multi-taking All code is read-only, local data implemented on a stack and procedures are automatically entrant, provided they do not u

As stated above RTL/2 is use for writing both application programs and system programs The needs of these two areas are slightly different: system program need more flexibility. To recognize this end in order to give manage-ment control, RTL/2 compiler have a facility whereby censin la guage features - for example, the to descend into machin code, to leave references uninitilised and to omit certain subscript range checks - are not available

plication mode, the constraints an enormous benefit when first de bugging a new program. Moreover, the overliess marked are very low and can be slicited a production program, turely allowing the manager to sleep peacefully in the knowledge the errors in the software will be

trapped.

RTL/2 is a very machine independent language. The only significant aspect which is not exactly prescribed is that the range of integers depends on the word-length of the machine; even so, the significant of 16 bits length of 16 bits.

Portability

The portability of the language itself is enhanced by the existent of system standards for interface such as input/output and error 10-

over the globe, from Argentins to Sarawak and from Canada to Aut-tralia. Users include famous name tralia. Users include famous name meny usera are in Westers designed), auto processing, communication

many, many others.

RTL/2 is now available of the PDP-11, VAX-11/80, in terdata 8/32, Philips P800, liesterdata 8/32, Philips PDP-11 still dominates with VAX and various micros grow

The success of RTL/2 can attributed to two factors: lis portibility and commercial support.
A loog period of stability is not
expected, with growth of use not
only on traditional minicomputers. but also on new microcomputers.

BS 5904, Specification for Categories programming language RTL/puter programming language RTL/puter programming language RTL/puter programming language RTL/2. BTL/2 Design and Philosophy.

2. RTL/2 Design and Philosophy.

3. RTL/2 Language Specification version 2. Imperial Chemical Industries Limited: 1974.



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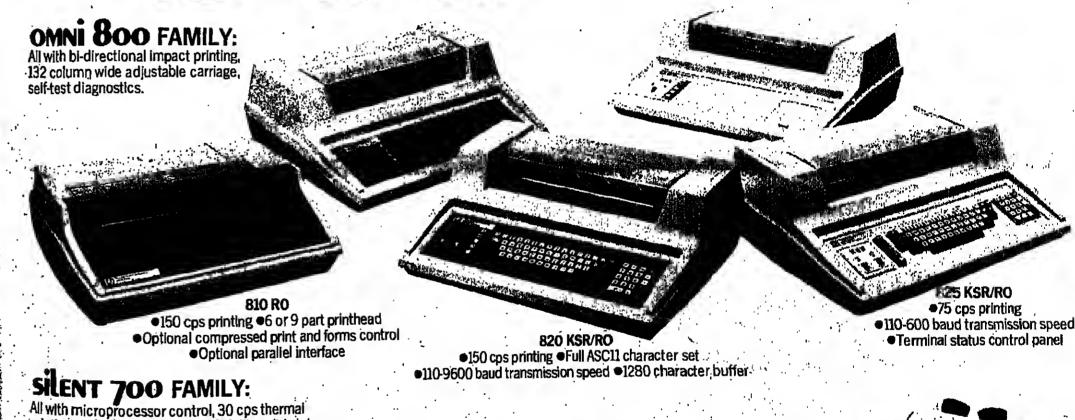
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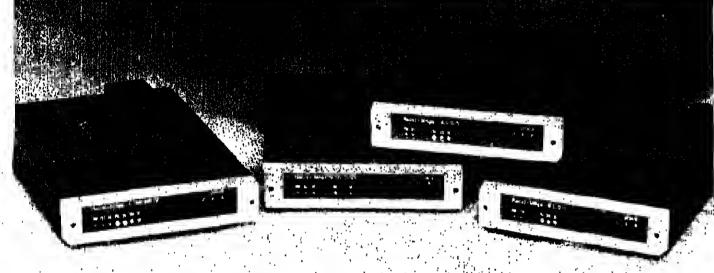
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by Eileen Stainer

DEC deal sought by Floating Point

WITH about 60% of its European customer base comprising digital manuseturer Floating Point Systems la looking at a possible joint marketing agreement with DEC, similar to cooperation exist-DEC, similar to cooperation existing stready between the two companies in the United States.

There is no contractual relationship but the companies ex-change confidential Information and DEC promotes actively the FPS processors interfacing with its PDP-11 and VAX maclunes.

only between FPS and DEC's Bracknell has picked up more then 100 British, Dutch and Scandina-Laboratory Data Products divi-

3g-bit floating point formsts. FPS hopes to forge a similar agreement with DEC's Engi-

neering Services Group which markets the 32-bit VAX 11/780. FPS offers attachment of its model

range of other host computers, both minicomputers and main-frames, with which they ean in-

The UK-based FPS operation at vian customers with epplication nal array, multiple data items besion, the latter interested primarily nreas including image processing, ing processed in parallel.

vices, radar, sonar processing and

used hosts include machines from Prime, Systems Engineering Laboratories and Perkin Elmer.

EPS machines employ a pipelined architecture resembling the FPS continues to sell its design of the Cray Research and machines to users of the wide Control Deta vector processors

DAP is s Single Instruction Multiple Date machine where one instruction is duplicated per microprocessor in a two-dimension

Intel fights pirates with CAD

LEADING US microelectronics into its ehip redesign programmes in an ottempt to combat the mar-ket squeezing of plagisrism.

The company receives less thon The company receives less thon half the turnover involved in its latel has devoted about 10 per cent of its total research and desingle chip g-bit microcomputer, the 80g0, although it accounts for CAD. more than half the 8-bit market. The rest goes to about a dozen companies which have copied the chip without a second source

structural changes to be brought

about by new technology - une of the first examples of "Future.

other competitors.

velopment budget (9 million) to

Manuel redesigns normally take up to a year and cost between \$500,000 and \$1 million; using CAD this can be reduced to six months and \$50,000.

THE DP department is a company ture event staged in London by within a company which should their firm, Nolsn, Norton and Co, business to have concentrated on

about by new technology — une of the first examples of "Puture fon in 1975 when they gave up believes that his firm has the best of the first examples of "Puture fon in 1975 when they gave up believes that his firm has the best of the first major lecturing at the Harvard Business DP management library in the world.

They now employ 75 professional consultators and claim to be along the first major lecturing at the Harvard Business DP management library in the world.

Addressing an audience of senior DP managers at the Tower

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was established by Nolan and Nor-

'Future Shock to affect DP dept first'

In the conversion of single chip company lutel is 10 incorporate computer-aided design techniques speed up the redesign and improvement of its chips and reduce and 80-49, the 8085 8-bit microprothe cost, enabling the company to cessor and 8086 16-bit micropro-keep o lead over plagiarists end cessor - to HMOS technology, Intal claims to have saved between \$1 1/2 million and \$2 million and to have gained six months on the

Particularly good at plagiarism are the Japanese companies which tend to wait until the smaller, faster and chesper versions are on



Micro Computer Centre chief angineer Melcolm Northar checks out an alling Pet at his company's Ghean heedquarters.

Sheen-style micro boom

CYRIL GRANT, founder of the hordware. In the words of Grant, Micru Computer Centre which has moved to larger premises in Sheen Lane, London SW4, told Computer Weekly that company turnover had risen by 200% this

"We did £2g0,000 worth of business last year and this year the figure has risen to £750,000," re explained.
The centre was established 20 months ago and employs a cur-rent staff of 24, including six pro-

rammera and three engineers. Micro Computer Centre offers wide range of microcomputer services, including packaged progrems, customer-oriented

gards es the "computer" era when the technical aspects of mainframe

much of the time of DP mansge-

ment. The next three atages integration, administration and maturity - involve the manage-

ment of dots as a resource, like

money, materials or labour, and

represent an era already reached

But coming up, according to

Nolan identified five separate

revolutionising technologies based on computers: networking, auto-

Dy slump

From front page

tor of PRC based in central Lon-don will also continue unaffected. Digital Equipment, which has already seen two OEMs, Gamma

and Bunzi Data Systems, go to the wall over the last year, described PRCI as a "yery minor" OEM in

the UK.

DEC has just introduced a DEC has just introduced a

distributor authorisation scheme in the UK which allows it to inves-

had been sold by PRCI since their agreement was signed early this

'Nolan, la'an era that will involve

by sdvanced users.

hardware and software occupy

the centre "aims to meet the needs of local businessmen within a 50-mile radius of Sheen Customers include a local fish and chip shop and wine merchant and the company's main-

tenance service is claimed to re-

act to customer machine

problems within five minutes. The company will extend its activities by starting o micro school both for computer students and business people. Three one-day seminars will be held on Jonuary March 11 7, February II and

Micro Computer's Centre's telephone number is 01-878

which opened offices here in July. The Boston-based consultaney was established by Nolan and North ics venture, is at the stage of ordering such advanced equipment for

NOLAN ... sees DP as geining dominance over compeny

saw DP gaining dominance over a company's atructure, with the various new technologies Interlinked by o systems architec-

major structural changes within a company brought about by the introduction of new technology. The process would lead to the "demassing" of the traditional monoilthic DP department.

mated software development, da-tabases to hold masses of dead changes would be the growing files, the autometed office need to increase productivity and workstation and manufacturing the realisation that computers were a relatively inexpensive means of

Asserting that the changes would be one of the first examples of 'Future Shock', as propounded by Alvin Toffler in propounded by Alvin Toffler in within a company Dave Norton, Services hit the consultaney's president, detailed the ways in which the DP operation justified being regarded as such, even more than older departments like finance, personnel Poor quality prints need to be encoded by haod, after which lard can be fed into the return process and matched in the and

The management of data as opposed to money, people or materials, involved dealing with the greatest impact on the rest of the organisation.

BT approval for Sematrans

PYE Business Communications of distributor authorisation scheme in the UK which allows it to investigate, the financial state of an OBM in depth (see page 3).

But the run down of PRCI means that Prime has lost the one dealer in the UK for its Informa. Telecom approval and means that

analysis package is available on the Pet micro for under £3,000.
CADSZanalyse, developed by Computer And Design Services is tion system which combines an full dubles transmission may be ton system which combines an full dubles transmission may be to the form, with its: Primes operating dialled telephone connection.

Prime spokeman said that a new tion to achieve this with standard dealer for Information would be synchronous communication, couple of Information systems.

A range of Philips moderns. Telecom approval and means that full duplex transmission may be carried out over an ordinary dialled telephone connection.

The modern uses ecbo cancells a program dealing with load bearlog members, pinned or negidly joined. Very little data preparation is required—all the engineers. neer needs to input is a sketch of the the dimensions and o note of the A range of Philips modems, covering speeds from 300 to The system is seen as a design

govt micro policy, says report THE UK is weak in 1-2 micros bipolar and MOS technology and will need experience with at

UK needs a

vanced wafer printers and electron beam equipment in order to be able to meet industry demands in four to five years' time.

This was one of the miscouclusions in a microelectrois

ndustry progress report comple by the electronics components to tor working party of the National Economic Development Office. The working party is chaired by Eric Hammond, executive con-cillor of the Electrical, Electronic Telecommunication and Plumbia

The report highlights the leck of a UK microelectrooles policy by criticising the lack of government support on microelectronics appli cations, and in the production of customised circuits.
This could evectually endange

the UK industry because of the imbalance between UK-owned and foreign semicooductor plans The report recommended that the government should increase the limit of support from 25% to 35% of project investment and even the original desdline of 1984 fo the Microelectronics Industry Support Programme.

The report went on to say that the industry's infrastructure is becoming weaker; for example, there is no UK opucal lithographic

inmos, the sole UK microelectro

On the technology side, Racal

and General Instrument Micro

electronics have recently an

nounced a joint venture, whi

gate CMOS devices at 2-3 micros

Catching

MATCHING fingerprints at the scene of a crime with those of known criminals on file should be

fluch easier with a computer system developed by Logica por under consideration by Scotland

A pattern recognition process allows photographs of fingerphint to be scanned automatically to find

out from the file whose prints the

way. Whether the police will see to buy Logica's system is not redecided, but if they do the Hondard Could be to b

Office's array processor made a

Engineer's aid

A. STRUCTURAL design

crooks

If the forecast production of standard integrated circuits in the UK is reached there could be an adequate market for a UK sikon crystal growing company by 1985, stated the report. The report comes at a time when

Il predicts that the cost of debe around 90% of total development costs by 1985.

This developed an interesting way of charging for its component software, which differs from curder construction in Newport,

behelp of Amplua.

rent methods. It is supplied on disc as a source and object routine library, with documentation copyrighted and supplied under licence by TI,
An initial one-year licence fee uf

month and in early January respec-

A concept originated by TI in an

sis (CW, August 14), component

rent software packages which enn

The five new products include an EIA (Electrical Industry Asso-

clation) communications package, an HDLC (high-level data link

tures relevant to his application.

Payment

He does this with the help of

around £1,000 covers in-house software use or manufacture and sale of products. TI does not in-

Price cut

PRICE of the basic model in tha M.One microcomputer range has been lowered by LSI Computers of Woking from £5,900 to £4,200. Included in this price is gK RAM, a 60 characters per second printer, VDU and a keyboard.

keyboard,
External etorage is on two
souble: density floppy dise
drives each with 612K of storage. A choice of basic appli-cation software like accounting, or inventory cootrol is also included in the price.

end to charge a royalty fee for each product manufactured and

The licence is renewable for a raction of the original cost after a year and the customer receives any software updates. Companies such as Intel are fending to out for tomer pays an initial sum followed. by lower instalments each time the

Package is used.
The talked initially about the Rx, which forms the heart of the concept in terms of a "software bus" (CW) November 13) which operates st present in a single

Processor environment.
Designed for multiple processing operations, the bus provides several levels of concurrence requiring the sharing of processor boltware components which fit

struments' component software representation of timing instruelibrary, and the Amplus software tions and implementations, endevelopment system will be available from TI distributors later this between software components.

Microprocessor Pascal (MPP),
TI's concurrent version of Pascal, Microprocessor Pascal (MPP).

Executive (MPX).

Pascal was chosen by TI primar-

ily ss a good design language and

testing the function of the system

checking, documentatiun and

new version of Microprocessor

Pascal, and the Rx-bug, a debug

ger hased on the software real time

TI is about to release MPP 3.0, a

Component software can be imemented with any hardware bus although TI has introduced simulattempt to combat the software cri- taneously the E-bus and hardware modules which correspond to, and software offers the 9900 family work with, the software compouser a library of real time, concurnents.

Texas prepares

software launch

turn-of-year

MICRO NEWS

can be used either as design nota-tion or as means of modelling and For example, the TM 990/303 be used continuously for a fixed annual sum. The first two packages released a month ago, the real time executive (Rx) and file msnager, form the heart of the special content. on a host computer.

MPP can be used fur syniax

Bubble file

TI hopes to introduce a bubble file manager system which could be provided as on update to the file mnnager package.
The EIA communications pack-

control) communications package, a Math pack, a dats pack and a file age con communicate with other All sre configurable, that is they processor systems and works with the 9902/307 datacom board. are modularly structured so that the user can select only those feo-HDLC communications pack-

oges support communication with ifferent processor systems, ineluding mainframes and programmable controllers, working 990/30g boards. TI hopes that the E-bus will be-

Amplus, and then takes the sec-tions required from the disc, blow-ing them into EPROM, again with come a standard because of the smoll number of pins involved — 64 compared with Mutorola's 140. The whole cuncept hos been de-It can take single and double Euronigned by TI as a way of overcoin-

> The company will provide main boards and marketing specific spplication boards for a user making

Math packs, data pseks and file I/O packs all assist the assembly language Rx user. The first com-prises complete ranges of arithnietic and trigonometric functions, the second sets of other operations like signed arithmetie, string compare and array manipulation.
Pile I/O packs provide device

independent routines between the user application and component aoftware subsystems, enabling software to be written independent of the device with whileh it will

interface in a general form. Component software and the Rx software bus were designed to operate with sny of the 16-bit 9900 family of mlcroprocessors including the latest, the 9995 (CW, No-vember 13) which has on-chip RAM and was designed in Bedford. According to MOS and Systems divisional head Peter Van Cuylenburg, the 9995 is just the start of a new generation of devices originating from the Bedford

New version

"A lot will be happening in the next year," Van Cuylenburg said, more or less confirming specu-lation that TI plans to produce a new version of the 9900 family in

Amplus is a TI software development system for the compo-nent software concept and it enables the user to modify standard Available in lanuary, it will run

all future softwere and cao incorporate the Ampl In-circult emulator if required. It is menu driven and can carry out foreground and background executions simul-

taneously.
In-circuit emulator Antil has been designed to support multiple emulators and can be used for debugging multiple processing

li providea a high level block structured language in which cus-tom command procedures con be

MODEM FOR THE PET in Amplus. Rx combines with the MPP run time support system to form the Microprocessor Pascal

COMMOOORE has developed this modern facility for the Pet, which conforms to the recommendations used by the world's tolocommunications significant to the recommendations and by the world's tolocommunications significant to the project is still in development and no re-

Motorola 64K EPROM in UK

now available in the UK from its UK distributor, Jermyn of Sevenpaks, Kent. Designoted the access time of either 350 or 450 nanoseconds.

power dissipsuon during standby operation, and has e maximum

CP/M floppy disc for **Nascoms**

GEMINI Microcomputers, the company founded earlier this year by ex-Nascom boss John Marshall, has made a Cl/M floppy disc system available for the Nascom I and 2 microcomputers.

The floppy disc controller car support three drives, although the CP/M system uses only one or two double-sided single density five-inch drives giving 160K of storage

Existing Nas-Sys software can be used on the disc system without CP/M, called the D-DOS system. loth ore available through seven newly-formed Gemini dealers situated in the Midlands, Surrey, the North-West, liristed and Lou-

A CP/M single drive syncin for the Nascom 1 is priced at £460 plus VA'l and for the Nascom 2 of £450 plus VAT. The double drive costs £650 and £640 plus VAT respectively. D-DOS single drive for either system is available for £395

computer Wang sells is a perfect fit.



Whelher you're buying your first computer or moving up, you shouldn't have to sellle for e general-purposa answer." Wilh Wang, you don't From our 2200 setias of

small business compulars to our powerful VS computer lamlly, every Weng systam is designed to be specifically tellored - in hardwere and softwara - lo do axecily whell you need done. From simple bookkeeping to larga-scale data processing.

And no maller which Wang syslam you stert with you can expand easily and ellordebly, from the smallast to the lergast model in the line. And full software compalibility within each product femily prolecis your softwera invasiment: . So instand of satiling for

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SPOT

Ops who chase the bankrolls of millionaires

account there would say more about you than a wallet suiffed with American Express cards. Its City uf London headquarters as Wordgate Hnuse is decidedly undomestic and nu entering the place you know you are in a hushed citadel of corparation land.

In the computer room on the eighth floor, life is mure liberal and the atmosphere less intimidating. A slight feeling of panie may be engendered by the fact that all the proliferating hardware has just been moved to the same floor, having migrated from the first and

The move is part of a general centralisation of staff and facilities within Landon, and Chase shared Woolgate Hunse with National Westminster until last year.

Hectic activity

Since then, the entire organisa-tion has been involved in what is known as "restacking" the build-ing. Eventually, all 1,100 of Chase's UK empluyees will be

working there.
"Restacking" meant a month of neetic activity for the computer department preceded by 18 months of planning. Operations manager Jim Ontes says: "We re-cognised from the beginning that the operations department would benefit from being closely involved

with the move. To that end, Clive Stamp was appointed operations supervisor with a brief to handle consultations with other bank dapartments and ensure that all details of the move

fore being phased out two years

The move itself took place over four weekends commencing on October 17 and it involved proces-

sors from four manufacturerst IBM, DEC, Ventek and Wang.

with millionaires, large corporations, and other banks and an account there would say more wood sdds: "It is not a good idea to be locked to one vendor."

The new computer room houses a 4-megabyte IBM 3031 running under VM OS/VS1 and CICs with mass storage handled by 16 3330 dises and a couple of 3350s.

PDP 11/70s for data cupture and a PDP 11/34. Finally, there is a Ventek minicomputer and two Wsng word processors.

The 3031 is used for programmer online tasks during office hunrs and then for batch work and the 11/70s are linked to some 120 terminals within the bank to espture individual transsetions as they

At the end of the bank working day, data is speeded on 10 to 15 tapes and fed to the 3031 for overnight processing with master files updated enabling reports to be produced for the following

Baby-sitting

The 11/34 is viewed best as s sophisticated word processor and Oates describes the ops role as "baby-sitting", it has a credit report link to New York and there are plans to extend links into Europe while the Ventek deals

with money transfers.

The 3031, the 11/34s, Wang word processors and Ventek development kil were moved over the first weekend, the entire opera-tion ending on November 8 when the 11/70 was installed into its new

were anticipated properly.

Stamp started with Chase as an operator on the Burroughs 3500 which lived on the tenth floor be
Oates is proud that there was no break in service to the 48 bank user departments during the move. He says: "From my point uf move. He says: "From my point uf view it's obviously easier having everyooe and everything on the same floor."

There are 24 people within the Chase ops department. Rohlt Bldd is machine room supervisor who controls three distribution clerks, a punch girl, three shift leaders;

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rangements. Distribution elerks work from 3am unul I lant controlling autput handling, decollating reports and copying microfiche.

Since November 3, unanimous demand of the ops, the machine room has been run under a two 12-hour shift system for five ds vs a week.

Ex-operator Peter Wond, whu sees himself as an integral part of the ops department, supervises three operation analysis and one junior. He oversees daily production work schedules, and lus department prepares new applica-tions working from programmer



All sides will profit when knocking the op stops

S. Small, chief operator with the Automobile Association In Bsaingstoke who reacted to my November 6 article in which I wrote about an op who had solved a problem in an iCL SMAC unit by thumping the time switch.

He writes: "Your predecessor

Bernard Allen seemed to be well aware of the ridiculous derogatory opinion that exists concerning the status, value and positinn of

"I was extremely surprised, therefore, to find you promoting, by way of your column, an action which could only give ammunition to those holding this view.

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"I respectfully suggest that you consider the implications of three senior ops and six operators printing an apparently innocent

item and, in this case, promote 'II' it doesn't work, take ICL site management to task' rather than hattering a harmless plece of equip-

The point is taken, Mr Small, and thanks for writing. It is true that operators are subjected to de-rision and characterised as serfs of

the computer kingdom.

When I told a friend I would write a weekly page for operators his advice was to keep the articles short and ensure that my copy remained monosyllabic.

However, during my three-month Op Spot operation I have found that ops are not the auboor-mal beings that I had been led to expect and that they lack the Individual and collective pretentiousness rife in the computer industry,

One operator I met recently has a theory which sounds entinently plausible. He claimed that most computer people rarely enter a machine room and see an operator at work. Equally as frequently, the

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The very stuff of prejudice

Top of the Chase Manhatts no operational tree are (left to right) operanager Jim Outse, computer opsico-ordinator Cilvs Stamp and production co-ordinator Peter Wood.

Stars and stripes illusions

by Paul Fisher

FROM time to time an op smiles

by wanderlust may contemplate tworking trip to the United Sume, stimulated by diamonds as big at the Ritz or fantasies about Steatfast at Tiffany's with Blondle.

Visious and expectations of riches beyond avarice may be bestered further by reports of Tens ops posts with a hause, car and manservent included in a supericially-appealing package. No see cially-appealing package. Not so, according to New York-based costsultant Phil Dorn, who has been working in DP on both sides of the Atlantic since 1959,

"US computer operators are regarded by management in the same way as lathe operators and often stay in their jobs for 25 eats," claims Dorn.

"Operations in the States," by continued, "attracts a different



PHIL DORN . . . Csutlanery words about US op praspects.

more emphasia in the UK on Concentrated steady cureer development and greater accaptance of progresion.

In general, American manage ment encourages long service by stlinulating company loyalty and offering employees petks from the moment they join the company.

As an example of this ter he quotes General Motor which gives all new employees discounts

HOW are operators selected for a job? Do ops managera look for a clutch of CSEs, time spent on a TOPS course or a doctorate in philosophy? Do they put their truat in sptittide tests, a track record or personal recom-

I overheard an ops manager saying recently: "What I look for he bloke who can lift a heavy box of paper." This short but cautionary tale should bring loy to the heatt of sexiats who want to keep tape apes and printer monkeys dumb, master line and similar. only times they meet are on thele way to or from some ungodiy shift or while they are relaxing during a The countdown Las begund I beg Get ready for Citizens Band radio with a brand-new magazine that. We show you how CB works tells you everything you want to know. We show you Get ready for Citizens Band radio with a brand-new magazine that Get ready for Citizens Band radio with a brand-new magazine that the state of the And what about the radio And what about the aircraft modeller? And what you feel; Get Tell us what you feel; Get Involved and get this very first Involved and get this very Issue of CB World! Involved and server on the state of the server of the s

PROGRAMMERS' PAGE

David and Goliath may kill off the programmer

COBOL programoters beware security comes from Adam, hours of classroom instruction David, Goliath and Tina (tiny

Adam).
This biblical bevy of systems, designed to strike an instant chord all round the world, comes from the stable of Lomac, Logical Machine Corp, of Los Angeles.
They are introduced to the UK by methods can be concentrated Beam Microqwest of London, which claims to have cut out the

Adyane, they say — meaning the non-specialist — can sit down at the keyboard and in half an hour-

"The idea," said J. P. Hillier of Beam, "Is that the accountant or executive who knows the business Kearos. If oot used, the time is backwards can interacr directly with the computer. He doesn't have to work through the system analyst, with all the dangers of miscomprehension; nor learn a complex programming language

"A list of nouns god verbs in plain English is all you need to program your particular applica-tion according to your oeeds."

one with previous computing ex- forwarding.

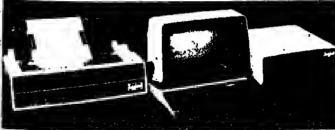
perience," but even the raw beginner should need only the 24 large selection of the users and ask supplied at the Beam Business Centre in Dean Street. This can be spread over a week

or condeosed into three days to or condeosed into three days to suit the customer. Beam prefers to together a system cspable of giving alternative route costings, freight keep each course dedicated to one upon, and recommends attendance by a maximum of three people. If whale of the middle-men of the this causes staff problems the courses can be ataggered.

A further 26 hours of follow-up tuition, either st the customer's own premises, by telephone, or gain at the Beam Centre, is available but not often used, I was told Kearos. If oot used, the time is kept in reserve in case of future

Challenged

Adam and his family can provide all the usual commercial applications - psyroll, stock cootrol, statistics, ledgers and the like. Additionally, Beam is offering special packages for lutherto neglected corners of the market. Just introduced in London, and already running Beam's claims should be mod-eraied to "half an hour for some-is a package dealing with freight



Tine is the deak-top model from the Lomec renge. It sen be programmed in plain English and uses lioppies of 1.25 million bytes' cepecity such. The intelligent printer produces 60 character lines at 67 per minute.

New hope for disabled

everything, but imagine the growing sense of purposelessness and

Any training scheme that can be taken to the disabled will provide that stimulus and involvement that

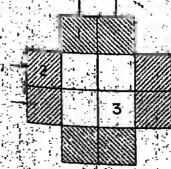
work project to train and employ in their own homes staff Now CDC has signed a cootract attached keyboard.

IMAGINE being disabled, stuck with Goodwill Industries of at home and unable to get out even lanta to extend Homework outside to work. Nice for a week, you may the company to help the severely think, lusting for a rest from disabled become computer pro-

The atudeots will use Plato-system terminals installed in their homes and connected to a ceotral which are aimed at being specific to a language or skill will last from perks up their self-esteem and to a language or skill will last from eventually improves overall health. six months to one year, depending Two years ago Control Data on the student's progress. This corp, a computer company based will be tracked by the computer Homework

Managers and students can who had become disabled and who converse, about homework results

Puzzler



IN this variation on the conventional Magic Square, the problem ile to ill in the nine vacant cells, unity the numbers 4 to 12 in such

a way that (a) the four rows of-four-cells indicated by arrows, (h) the two differently shaded oppo-site pairs of four cells each, and (e) the central group of four cells, all total to a coostant of 26. To make the task more difficult, the first the task more difficult, the list three digits in the 1 to 12 consecutive sequeoce have already been lisserted in fixed positions.

See page 37 for solution.

Referring back to the October 23 Puzzler, several readers have

worked out aoother 26-stroke minimum round, using different optimum shot lengths of 75 and 175m. More details will be for warded to interested parties on receipt of a stanaped-addressed envelore.

them just what they want to go on to a computer," and Hillier. "In fact, the shipping people came to us - they challenged us to put

his own requirements, without re-

course to the expensive DP profes-

Tine and Adam both consist of a

comes equipped with a vocabulary

New words used by the system are

automatically put into memory.

Data and programs are atored on

floppies, each containing 1.25 mil-

VDU with keyboard, disc drive, and attached printer, Tina (Tiny Adam) is the desk-top version and There is a lot of paper-shifting in the freight business, and doing it manually is clumsy and leads to all sorts of delays. That's where

the computer scores." Beam will supply its customera free with any of the packages already devised, but the beauty of

the system is seen to be the ease

and flexibility with which the cua-

Adam has a bigger information

The latest epplications peckage evaluable on the Lomac range is for freight forwarding. The system produces route costings, freight accounts, manifosts and documentations, and reduces the problems of manual paper moving. terchangeable disc, joint capacity 10.6 million bytes. Adam cen also plete with its own David. be a good listener, an optional

mands to hypass the keyboard.

aystem with a seperate floppy unit.
Prices range from £5,000 for a

Tribute newest additions. Not surprisingly, Goliath is the larger, and as a shared database can support up to 20 linked Tinas or Davids. David is the small screen terminal

David to £17.500 for Goliath con

Hillier finished with a tribute to l'ina. "You can teach the job to Tina in plain English, the way you would a trainee clerk, but the difference is that Tina will not forget your instructions, nor will she up and leave the firm taking it all with

ls this finally the writing on the wall for traditional programmers? Prophecies of doom have been two-a-penny - but it's not often you hear from the programmers



It's got more features than any other 30cps teleprinter it's compatible with just or continuous listing. about every computer there is it's dependable its readily available. And it costs just #4.6475 on orders of 200, Only the LA34 teléprinter dan give you so much. Only one Options manufacturer could charge so little for it.
Digital. You see, we're the worlds leading manufacturers of terminals. And when

Principal Features: 1. Desk-top unit based on conventional typewriterdesign-ensures rapid

operator acceptance: 2. True 30cps average speed, 45cps catch-

you look at the LA34, you see why

3. 9 x7 dot matrix gives remarkable clarity. 4. Full 128 ASCII character settl

10, 12, 13:2 or 16.5 characters per inch. 6. Up to 132 columns using standard font,

218 columns using compressed font. Adjustable line spacing: 2/3/4, 6, 8, or 12 lines per inch 12 lines perinch.

8. Uses ordinary paper: single sheets, rolls

9. Easy, to-change cartridge ribbon. 10. Just 25lb weight!

Nümerio keypad. Tractor feed. Terminal stand Paper roll holder Paper tray "Paper out" switch. "Paper low" switch, 20mA interface. Extended logic option. Optional spacing.

digital

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Ops who chase the bankrolls of millionaires

THE Chase Manhattan bank denls with millionaires, large corporations, and other banks and an account there would say more about you than a wallet stuffed with American Express cards. 11s City of London headquarters at Wordgate Huse is decidedly under VM OS/VSI and CICs with doniestic and on entering the place you know you are in a hushed citindises and a couple of 3350s. del of corporation land.

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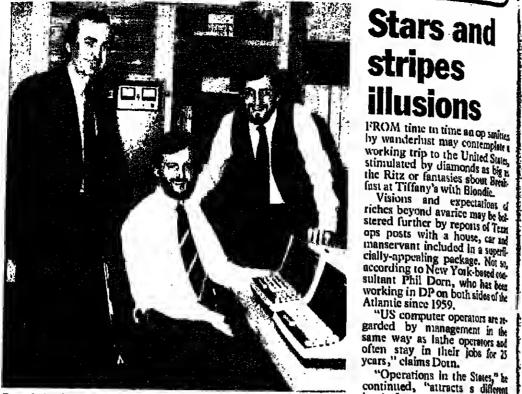
SEEIFYOU

CAN BEAT

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by Paul Fisher

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The countdown.

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Los begun.

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Los begun. Get ready for Citizens Band radio with a brand-new magazine that tells you everything you want to know. We show you how CB works tells you everything you want to know. Get ready for cittzens Band radio with a brand -new magazine that wow countries and the know. We show you how cised tells you everything you want to know. We show you have as shirts and how to use it. We've got a full colour spread on case as shirts and how to use it. We've got a full colour spread on case as shirts and how to use it. We've got a full deals on case use Us Truckspeak of the shirts was and hadges And we ask should we use Us Truckspeak and hadges And we ask should we use Us Tru

PROGRAMMERS' PAGE

David and Goliath may kill off the programmer

COBOL programmers beware agio. The latest threat to job segment should need only the 24 large selection of the users and ask security comes from Adam, hours of classroom instruction then just what they want to go on the latest applications package available on the Lomac range is for traight torwarding. The system produces to a computer," said Hillier. "In route costings, freight accounts, mantlosts and documentations, and reduces the problems of menual paper

Adam).
This biblical bevy of systems, the stable of Lomae, Logical Beam Microqwest of London, which claims to have cut out the whole of the middle-men of the

DP department. Anyone, they say — meaning the non-specialist — can sit down at the keyboard and in half an hour-

become fully operational.
"The idea," said J. P. Hillier of Beam, "is that the accountant or executive who knows the business backwards can interact directly with the computer. He doesn't have to work through the system analyst, with all the dangers of miscomprehension; nor learn a omplex programming language

"A list of nouns and verbs in plain English is all you need to program your particular applica-tion according to your needs."

Concentrated

one with previous computing ex- forwarding.

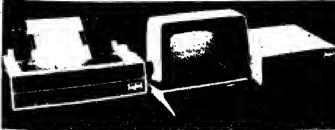
perience," but even the raw "It's our policy to go out to a beginner should need only the 24 large selection of the users and ask Centre io Dean Street.

designed to strike an instant chord or condensed into three days to suit the customer. Beam prefers to alternative route costings, freight keep each course dedicated to one Mechine Corp, of Los Angeles. company, so that its business They are introduced to the UK by company, so that its business upon, and recommends attendance by a maximum of three people. If this causes staff problems the courses can be staggered.

A further 26 hours of follow-up tuition, either at the customer's own premisca, by telephone, or again at the Beam Centre, is available but not often used, I was told by training manager. Helen Kearna. If not used, the time is kept in reserve in case of future

Challenged

Adam and his family can pro vide all the usual commercial applications - payroll, stock control, statistics, ledgers and the like. Additionally, Beam ia offering apecial packages for hitherto neglected corners of the market. Just introduced in London, and already running Beam's claims should be mod-ensed to "half an hour for some-is a package dealing with freight



Tins is the deak-top model from the Lomac renge. It can be programmed in plain English and uses lioppies of 1,25 million bytes' espasity sech. The intelligant printer produces 60 character lines at 67 per minuta.

New hope for disabled

think, lustlog for a rest from everything, but imagine the growing sense of purposelessness and isolation from life.

Any training scheme that can be aken to the disabled will provide that atimulus and involvement that perks up their self-esteem and

project to train and employ in their own homes staff who had become disabled and who

Puzzler

IMAGINE being disabled, stuck at home and unable to get out even lants to extend Homework outside to work. Nice for a week, you may the company to help the severely disabled become computer pro-

The students will use Plato-system terminals installed in their homes and connected to a central which are aimed at being specific to a language or skill will last from eventually improves overall health. six months to one year, depending Two years ago Control Data on the student's progress. This corp, a computer company based in Minaeapolls, started its and monitored by Hornework

program managers.

Managers and students can converse, about homework results Now CDC has signed a contract attached keyboard.

tional Magic Square, the problem is to fill in the rine yacant cells, using the numbers 4 to 12, in such

four-cells indicated by arrows, (b) the two differently shaded apposite-pairs of four cells each, and (c) the central group of four cells, all total to a constato of 26. To make the task more difficult, the first three digits in the 1 to 12 consecthree digits in the 1 to 12 consecutive digits in the 1 to 12 consecutive sequence have already been inserted in fixed positions.

See page 37 for solution.

Referring back to the October have

23 Puzzler, several readers have worked out another 26-stroke minimum round, using different optimum shot lengths of 75 and 175m. More details will be for warded to interested parties oo receipt of a stamped addressed entering.

applied at the Beam Business to a computer," said Hillier. "In fact, the shipping people came to us — they challenged us to put his own requirements, without recourse to the expensive DP profes-

> "There is a lot of paper-shifting and attached printer. Tina (Tiny Adam) is the desk-top version and io the freight business, and doing it manually is clumsy and leads to

Beam will supply its customer free with any of the packages already devised, but the beauty of the aystem is seen to be the ease and flexibility with which the cus-

Adam has a bigger information tomer can program and amend to

Tina and Adam both consist of a

comes equipped with a vocabulary

New words used by the system are

utomatically put into memory.

Data and programs are atored on

floppies, each containing 1.25 mil-

terchangeable disc, joint capacity 10.6 million bytes. Adam can ulso be a good listener, an optional microplinne allowing verbal com-VDU with keyhoerd, disc drive, mends to bypass the keyhoard.

Tribute

newest additious. Not surprisingly, Golieth is the larger, and as a shared database can support up to 20 linked Tinas or Davids, David is the amall screen terminal aystem with a seperate floppy unit. Prices range from £5,000 for a

David to £17.500 for Goliath cum plete with its own David.

Hillier finished with a tribute to ina. "Ymi can teach the job tu Tina in plain English, the way you would a traince clerk, but the difference is that Tina will not forget vour instructions, nur will she up and leave the firm taking it all with

la this finally the writing on the wall for traditional programmers? Prophecies of doom have been two-a-penny - but it's not often you hear from the programmers



30cps teleprinter it's compatible with just about every computer there is. It's depend 9. Easy-to-change cartridge ribbon.
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you look at the LA34, you see why.

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PEOPLE and EVENTS

Honour for founder of F International

STEVE SHIRLEY, chairwoman and lose much with the industry altogether, she formed her own computer software consultancy and contract programming Inckingham Palace for services to the

Germanian range is a companier industry.
German-tourn Shirley emigrated to England at the age of five, and in 1950 adopted British citizenship. She got an analysis from honours degree in malhematics from London University, and gained work experience with the Post Office and a obsidiary of ICT, which is now ICL. In 1962 she left full-time employ-ment to have a baby. This opened her eyes in the problems of those who

wished to work but were ned to the

Russ Pinnegar has been oppointed financial controller of MDS Computer Systems. He was previously accommunity office manager at Crusader Board and

Rodger Spooncer, who has been an capan sales manager with Massey Ferguson and a regional sales manager with Hymac, has joined Blick International as export sales manager. Pat Harwood, formerly Blick's group manager for the South-West, has been named to Sewith-West, has been named to Sewith-West, has been named to Sewith-West, has been

The commany's non-technical staff are freelance, and work from home. Consequently much of the workforce, which today totals over 600, is made up

Sieve Shirley gave up the day-to-day running of the company in 1975, having established offices in Copenhagen and Amsterdam. She is vice-president and a founder member of the IICS, and in 1976 was the only woman to be elected to its cauneil. She is a member of the Department of Induswished to work but were tied to the boule, either through ilomestic continuouslis or disability. Rather than Chesham, Buckinghamshire.

> Mike Chotwin has become tranchise manager at Jerniyn für Unito Carbide and the I'l' capacitor. I'lls previous title was sales specialist. David Willard

> Nigel Bartram, of Hallmark Compuiers, liss been promoted from pro-iect deader for Series B to senior pro-iect analysi for sales support, business systems to run on Jacquard multifunction Videocomputers and Honeywell Level 6 systems.

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all for full details of the Comma Robin, Hawk, Kestrel, Phoenix and Eggla Systems

PDP (1/23 85 al



Two thousand visitors to Compec handed in their business cerds to the Two thousand visitors to Compec handed in their business cards to the MCS stend, to take pert in the company's whisky draw. Brian Creaswell (left), a computer programmar with Amoco Europe, won the first prize of 12 bottles of Scotch. Presenting the prize is Mike Hicks (right), Southarn Region marketing menagar for MCS, who hended over the case at Amoco's London Data Centre. Twista runners-up each received a single bottle.

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Top job at ICL Dataskil

NEW managing director of ICL Deteckil is to be Tony Hadaway. He will be based at the compeny's Reeding headquarters, where he will take over from Tim Hollay, who was recently appointed director of the

eompany's services group.

Hadaway Isaa been with Dataakii lor 20 years. Alter gradualing ii hadaway tras been with Dataskii for 20 years. After graduating in languages from London University, he joined the company as a selesman, working through a variety of managerial positions and serving most recently as manager of the Southern Sactor.

Hadewey, who is 42, was involved in the introduction of point of eele eyateme into the UK when he was menager of the rateil and distribution sector. Lest yeer he doubled the ICL new business sales lorce. He is a member of the BCS.

Amateur club chairman

PETER WHITTLE has been elected chairman of the Amateur Computer Club, ACC, the association set up for The club, formed in 1972, is a national organisation that offers a variety of services to its members in an effort to facilitate eschange of information and ideas between computer en-thusiasts, and to help with their home

The ACC offers members access to Forming a new

MARKETING director Tony Cawkell is leaving the Institute of Scientific Information at the end of the year to form a new company, to be called Cawkell Information and Technology Services Ltd (Citech).

company

Cawkell joined the Institute in 1967 as director of European morketing. He went on to establish ISI in Europe, setting up regional offices to cover all

research at ISI Philadelphia, and his most receot activities with the Institute Include the development of its Scitel Science magazine on Prestel, and work oo a new publication to be called the Atlas and Encyclopaedia of Biuchemistry.

One of Citech's first products will be s review publication covering informa-tion technology. It will also undertake

Paul Taylor has been appointed marketing communications manager with Priote UK, replacing Michael Grant who is to head marketing communications for Prime in Europe. Taylor was formerly marketing executive responsible for Greenhams, at Taylor Woodrow.

Alan Brown has been appointed senior sales esecutive at Systek.

the club software and general informa-tion fibraries, has local groups which hold their own meetings and letters, and has a limited technical inquire service. The club also has a bulk bup-ing group, providing disparents. ing group, providing discount to men-bers on a number of lients.

Membership is currently £3.50 a year, using to £4.50 from January 1931. It is opeo to anyone interested in computers.

For further information and a men bership form write to the hon, men-bership secretary Jim Macdonald, I Carlton Court, Studiey Grange Read, Loudon W7 2LU.

Restructure at Agfa-Gevaert

THE office division of Agit-Generalias heen restructured by divisions

manager Don Say.

Barry Wild, formerly a London are monager for Gevafax, the company's plain paper copiers, becomes maketing nuenager with the division.

Dudley Weneley, also a former London are monager in the company's plain paper copiers. don area manager is now seles manager for Copex and COM products.

New Gevafax area managers have been appointed from which the company. They are: Ken Edwards (London North), John Perkins (London South), David Hemmings (Midipal) and Ian Peron (Northero area, basidas (Blassouth).

Petrick Gouldney has been appleated marketing director at CSB. He joins the company from University Computing Co, where he headed offices in Ircland, Holland, Losson and Birmingham. He was divisional director in charge of client services immediately prior to joining CSB.

supply of electronic main ex-Roger Crumpton, formerly sales manager for the Northern Home Commies and London at TDS, has changes.
Ferraoti, although a relatively minor commercial data processing supplier, pushed half-yeor profits ahead by over 80% from £3.5 million that loo last year to £6,4 million that half-year.

Group and the Cambridge Instrument Company medical division to form e \$625 million medical electronics corporation.

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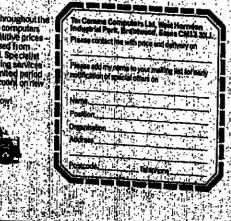
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DECEMBER 15
Talk Technological advances. BCS
Glasgies tranch: Suff club, Strathclyde University, Glasgies. 19.00:
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DECEMBER 16

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DECEMBER 19

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Central Libodon branch: Burops Wire
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COMPANY NEWS

No sellers for **MNW** shares

FORTY per cent and 32% in-creases oo fourth quarter profits Briush Telecom's monopoly of

and sales respectively have been announced by data communice-

tions manufacturer General Data-commin the US.

Total Cetter said: "We con grow GDC at the pace we want to with-

doubled this year when a new quired that meaot ending up with 207,000 square foot factory opens a bigger box.

Sales had been made to all the in Waterbury, Coonecticut, in July. Sales, employees and premises have already been dou-

bling every 2½ years.

GDC set up a UK subsidiary in January to prepare to take udvan-based on its Netcom series of net-

THREE major UK computer equipment manufacturers reported financial results this week, influence, had half-year profits of £38.6 million were up

Plessey doubles profits

SHARES TABLE

115 Index movement (10)

6 1 (827 3 - 10 17 27 1 6 15 22 29 5 12 19 36 2 8 18 23 8 9 18 23 6 13 20 27 4 11 18 25 18 15 18 28

Oct Nov Dec Jan Feb Mar April May June

The company was not aiming to sell to British Telecom, he added,

because even under ita experi

ments with buying proprietary equipment such as moderna in-stead of having it made to its owo

GEC pickings

principle to buy out RCA's Picker Corp for \$200 million. Picker will

join GEC Medical Equipment Group and the Cambridge Instru-

of the Capital real time stockbroking service (CW, Deccorber 4), the shares of NMW were virtually unobtainable, with a shortoge of sellers and e surfeit of buyers.

The company was treding at £4.70 for the £1 shares just before last week's announcement of the world's first real time stockbroking service by the Cheshire-based

The increases for the year were

36% on profits, to \$4.4 millioo,

and 30% on salea, to \$53.6 million.

Sales have grown for 10 consecutive years, and since 1975 at a rate

Production capacity is to be

100% on the same period last year.
A huge £11.8 million slice of this

Improvement came from the

187 -78 1/2 Caser Auto (100)
188 100 Racal Elect (25c)
194 287 Thorne Mil (25c)
194 100 US Stocks
1880 Stock

paid for a shere end either its pest ACT's helf-yearly prinfit of or future earnings potential. £407,000. Compared to Scandata end The usual P/E range on which

ACT, both trading in the same restricted Rule 163(2) section of the Stock Exchange list, NMW was on a very low price/carnings ratio.

At 170p for the 25p share ACT At 470p for the 25p share, ACT

Apple is placing a small number has e P/E ratio of ebout 28, end of its shares on the American mar-Scandeta (180p for the 25p share) ket, end expects tu make \$14-17 hos an epproximete 24 ruting. This puts the company on a price/earnings ratio of about 8, the price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company on a price/earnings ratio belog e common way of expressing the company of the com

Datacoms firm's £4m profits CITY of Lundau computer services company Consultants (Camputer end Finenciel), has acquired controlling interest in Paylinc Computer Services, formerly of Ealing and specialising in smell payroll systems. CCF's services inend multiplexers, GDC would install a management system to clude large payroll operations and running interactive financial seror would even supply other vices on its In-house minicomputmakera' equipment if necessary.

Texas to pay back £300,000

usual move, has offered to pay back over £300,000 to its cus tomers in the UK.

The money represents the iffcrence between what rexes Instruments would beve hed to pay its overseon suppliers, had the pound no strengthened during the year. Rod Attwooll, marketing director of Tl. said, "We prefer to work from e stable cur-

Payroll merger

Storage tidies takeover deal

STORAGE Technology's purchuse of Documentation is all but tion managing director Colin Cool complete, apart from a series uf legal provisions in a special escrow purchase.

"By taking on the Documents A number of printer manufectinn employees in the UK, I wil turer Documentation's ex-emdnuble my operation, from 60 people to 120. With 400% growth ployees are still pursuing the company through American courts and half-billion dollar turnover Storage last year and a 200% target for next Technology has placed 13 cents of the value accruing to each share it paid for Documentation in the special fund, pending the legal

The Documentation factory i Ireland will continue to be controlled from the USA, his with Storage Technulugy in control.

BIS group £1m profits aim

PROPITS of around £1 million and the prospect of further takeovers are forecest for this year hy the BIS Group, the consultancy, snftware and direct mail group. Director Devid Tebbs says turnover for the year ending Febritary 1981 should be £8.6 million, of which fully £3 millinn will stem from the highly successful Midas banking package end ite support

stake in training group BIS-Deltak to its US partner Deltak inc for £1.4 million and is now "energeti-

cally looking" for acquisitiuns. BIS recently puniped £100,000 into Northampion consultancy nn option to increase this to a eontrolling 76% ahare.

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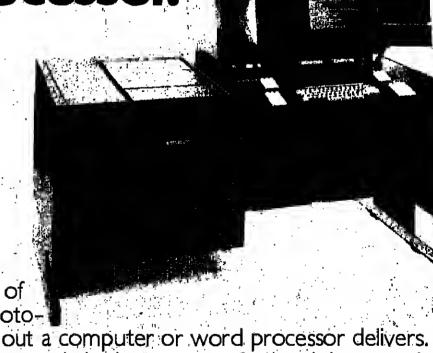
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Drawing the data

flow diagram Section I — Part II

of our series describing a system design methodology

by Rosemary Rock-Evans

perfurm it. This breakdown was shown diagrammatically using a function hierarchy. Each function

The entity types entering the external to the business.

however, is not designed to show the sequences of events (hence functions) nor where parallel events may legiumately take place.
The method used to show sequence and function dependency is that of the data flow diagram. The purpose of the data flow

diagram are:

1) To ensure that the function hierurchy is complete and that no functions have been omitted or placed at the wrong level.
2) To provide o basis for system

and program design, by showing the order of processing which must be completed for each transaction. To be used in access path analysis, a technique which will be described in later articles and which leads to database design.

Basic constructs

Figure 1 the basic diagrammatic conventions used to draw data flow diagrams are showo. A function type is described using a that level are shown in a logical box with the name of the function sequence from left to right in the Inside the box.

Each function type has at least the events which have triggered two flow lines associated with it, the functions, and secondly the

IN a prerious seticie the technique one or more depicting input shown functional decomposition was by an arrow entering the box and described: a method of analysing the functions of the business — or what the business does — into more top of each flow line is the name of and more detailed sub-functions. the entity type(s)/sub-type(s) Thus each activity is broken down transformed by the function. A into the activities needed to third line may indicate entity types

is said to be triggered by on event, whether this event is internal or the correct "state" for the function to be actioned. In other words, if a The function hierorchy, function can only be actioned owever, is not designed to show when an entity type is in a certain

state It is assumed a previous func-

tion must bave transformed the

entity type into that state. In the "Make Tea" function we

have been using, for example, it is assumed that the input to the "Put Tea in Teapot" function must be a

tion hierarchy. The functions st

28 High Street, Nannyich, Cheshire Telex: 36329

the basis of the transactions during

the input used by the next function In the sequence. If this is not the case, either a function has been missed, or the sequence is wrong, ur the levels in the hierarchy have been wrongly defined. In Figure 2 an example is shown

from the Household Management function. The functions Boll Water, May Warm Teapot, Put Tea in Teapot and Pour Boiling Water in Teapot all come from an expassion of the Make Tea function. The inputs to this function are Unboiled Water, Empty Kettle, Empty Teapot, Tea, and

The Lay out Tea Things, Boll Water, Pour Bolling Water in Teapot, and Put Tea in Teapot functions can all be done in parallel. There is a sequence, flowever, to the Boll Water and Poue Boiling Water in Teapot

a) What functions must be completed before this function? b) What functions can be completed at the same time os this

il after this function is completed? It is important that every event followed through to its logical conclusion to ensure that functions have not been missed. It is these initiating events which will form

2) Input/Output. Each function is examined to ensure that the output produced by one function is in fact

The important thing to notice is that although we have managed to draw a data flow diagram for the sub-functions of the Make Tea function (and this should always be the case), we can also see that the input for some of the functions comes from functions not in the Make Tea hierarchy.

Worm emply teapot

This is an essential point io the drawing of data flow diagrams. Every function at one level within the total hierarchy should relate to other functions, by being either the provider or the receiver of attribute types. This point will be explored more fully in the article on function networks. It is importent to reslise, however, while doing function hlerarchies that the functions must get their input

from somewhere and their output A second example is given in Figure 3 which shows the func-tions which were identified in the functional decomposition of the Handle Patient's Death funedon and how they loteract with other functions from other hierarchies. In this example, it can clearly be used in network analysis. seen that all the sub-functions of the Handle Patient's Death func-

Network analysis, PERT or critical path analysis are three

or in other words could happeo in parallel. This is because they deal with different entity types. If they had not, there would have been a unctional dependeocy between the functions.

The example clearly shows how previous functions (assumed to sve come from other hierarchies) change the entity type so that it is in the correct state for that func-

Data flow diagrams provide a picture of the functions and their interaction and dependencies, which the function hierarchies cannot provide. At each level within a function hierarchy they provide valuable extra information for use during the detalled analysis phases and the design phase.

Dats flow diagrams have been soked at in the context of the functions of a business. It is interesting, however, to note one further use which may not be immediately obvious. It may have occurred to some readers that there is a similarity between data flow diagrams and the diagrams

It's going to be another computerised Christmas. For our special feature on toys and games this year we thought there would be no one better to ask what is in store for us than a schoolboy. So we picked 13-year-old laime Gorman, Computer Weekly's chess playing prodigy.

I'm dreaming of a micro Christmas



COMPUTER WEEKLY, December 11, 1980

Among the games, poisod to moke another move against a micro, is 13-year-old Jalmo Gorman

- SAYS CW's CHILD CHESS PRODIGY

ness and choosing toys can be u lot flagship. of fun, even if expensive. On every child's "wanted list" there has to

For the very young 13-9 years) there is Star Rider, a rocking horse 1980-style. This is an electronic sit and spin toy with masses of controls, switches, sound and visual effects - all the trimmings for the small astronaut to venture into outer space. This looked sofe, strong and well designed.

Big Trak, in the 9-12 group, is a computerised vehicle capable of carrying out up to 16 different commands in any one sequence. It has a calculator type keyhoard and by punching in commonds an itempole memory is activated. Ou cat loved riding oround on it

Simon is great fun. It has a series of coloured lights and

sounds, which you try to copy by pressing the correct panels. When

ou bjunder it makes a rude noise.

There is, therefore, basically w difference between a function so a project and hence between netdespite the noise and flashing position and dats flow diagrams apart from the diagrammatic Bigger hit

CACI uses data flow diagram for project control and in fact has ound them to be more effective than the network analysis diagrams, simply because more levels The next article in the series will

conventions used.

names used to describe a technique

for project control. The tasks of

the project are identified and then

sequenced using a network dia-

gram. The dependencies between

asks determine their sequence and

times are allocated to each task to

show which sequence of tasks is

A business cao be thought of as.

n series of projects which are repeated, or similarly a project child

be thought of as a one-off function.

the critical path.

fown-ups seem to get hooked on deal with entity sub-types. This year its baby brother, pocket Simon, may be an even big-The Data Analysis methodology

ger hit, as the latest trend from America seems to be hand-held was developed at CACI by lan. These vary in price and size, but ine basically electronic, portable and either programmable or non-

programmable. The choice here is so vast that it is impossible to pick in outright winoer.

Galaxy Invader by Computer
Games, Microvision by M. B.
Games, Sub Chase by Mattel, and
Merlin by Pallitoy are just some of
these sport and some of hee sport and space games.
Again, they are suitable for almost any age and would make a rety acceptable present.

Sound effects

Lighthearted board games always seem to be around, bought mainly by adults for children (not

mainly by adults for children (not by us for our selves). These lack the excitement of their computitised conderparts, with the exception of good old-fashioned Monopoly dow in its 47th year.

Battleships is another old game; and used to be played between two players with a pencil and paper. It been updated and become Computer Battleships, complete with realistic sound effects. The object is to seek out and sink your opponent's fleet bofore it destroys.

Bodging the gap between ordinary board games and micro-based Etines is Star Chess, This concept, developed by Peter Gebler in 1978, stempts to link space wars with the ches. Pieces have been renamed and saon player is Admiral of a star Fleet, and the mission is to renamed and the mission is to

CHRISTMAS is always big busi- mander while protecting your own the latest in a series which used to

find on extrn dimension in it, but i bes computer-type game this year. is 1980 and the space wor in Video I decided to try out as many as I Games is very much on. In my muld, and select what I wistild and book, Star Chess does not look like would not like to have, i.e. the best one of the strongest contenders

Latest entry

games like bridge, backgsmmon, and chess, there is a terrific variety of oischines: The choice depends portly on the player's strength and bank balance, because these miniaturised computera ore not

with a chess computer, for example, you have your own permanent opponent, and the ability to alter the level of playing difficulty.

One of the best is the Sorgon 2.5 Chess Module by Chapitz. This is

be called Basis. It has a strong, fast program and if yun make the expected move it replies instantly,

Fidelity Electronics offers II wide range in the Challenger Sensory Challenger and most advanced the Voice Sensory Challenger. In both, every move made on the board is recorded automatically and squares light up to tell you what move it is making in

which saves time.

member that your opponent is not human. At the top level, they provide scrious opposition but on lower levels can be used to play ogainst end instruct beginners.

We come now to TV garnes, the most spectacular section of sll. These will link "fust toys" simply with the genuine home computer. Intellivision by Mattel Electronics

Philips G700, and Ateri by Inger-soll, and it seems worthwhile to take a closer look at all three. Intellivision is a new strival on the computer Video Games market and promises to challenge Atari closely for the leading position. Full marks to Mattel for coming up with two ways of obtaining this great product, either by buying or renting. You can hire this 16-bit

micro plus a pair of cartridges from most Radio Rentals stores for as little as £5.95 a month. Similarly, it can be bought at most toy or electrical sliops for around £200 (twice as much as

Atari). Additional cartridges cost between £12 and £15. It is the first home TV game which allows three-dimensional, realistic games such as football,

tennis, basketball and lookey. It is which at less than £100 more than o game, the keyboard converting your latellivision. should you choose one, into an cusy-to-use home computer. This

The Philips G7000 is an inge-ninus Video Centre, based on, latest technology. It has a touch-sensitive keyboard, which is simple to use for the most sophisticated fun and educational games.

Philips is introducing five new cartridges, so its current range is extensive. This must be the most handsome of all three leading Video machines, placed midway between the Mattel and Atari.

Ingersoil Electronics brought out a front runner in the TV games field three years ago, despite comments by other competitors that "Atarl is dead" it is still, in the opinion of most people, very much

There is also the widest and most updated selection of cartridges with plenty more in the

Atari doubles as both fun and education for everyone, all in one big box. Its Space Invaders car-tridge has become a household name, and figliting your own private space battle has become every small boy's dream.
The last Video Game I tried out

was Database by Waddington. This was a disappointment as the cartridges were mundane while the eonsole lacks originality.

Sound effects were of a high standard, but overshadowed by the fact that no skill is required to play any of these games.

P.S. Dear Manufacturers. If had to choose belween a machine which had batteries and a plug and This is due largely to several factors, the first being its price,

The games people play

IN AN increasingly rigid, organised and uniform society, aports and games provide a wide range of psychological outlets and inputs. Games provide relaxation, a distraction and escape from the rat race tensions we call reality. They also provide stimulus and excitement in a sociaty that is

paradoxically boring and unexciting. In medieval times, dicing and chess filled with some success the long winter evenings of the upper classes. Today, chess, bridge, Scrabble and Monopoly are games found in many families.

Do computer techniques herald a revo-

fution in the way modern man will use and need games or do they meet some psycho-logical needs in a new and different way? Indoor and outdoor games, unlike mod-

ern shirta, come in a range of shapes and sizes which meet collectively a variety of psychological needs. In addition, games help an individual exercise specific skills and the games a person plays reveal some-thing about both his or her pattern of skills and personality.

Most outdoor games demand a high degree of hand-eye co-ordination with brawn as the next variable and intelligence a poor third. With intellectual games, intelligence and personality are the key issues.

Specific skills

We expect a rugger player to be tough and thick and an international chess master to be an intellectual giant; however, to excel at any sport requires intelligence and chess calls for rather specific skills.

cness cans for rather specific skins.

Mathematical and musical shifty tend
to go with chesa Philidon was a professional musician and Richard Strauss, Moritz Rosenthal and Sergei Prokoffey were

iall first-class chess players. Pew grandmanters have excelled in po-lities and few politicians play chess. For politiciana, poker is the more natural game and Ronald Reagan's most certainly plays a better game of poker than Jimmy Carter. Americana believe than 8 man who can-

not keep his end up in a first-class poker game is not fit to be president. As a young

'Space Invaders." says Alick Elithom, "is porn with feeliea." A games historian and inventor, psychologiat and programmer, he looka at the psychology of games past and present.

man, Richard Nixon always took poker

very seriously and during his US Navy service was a steady winner.

His poker winnings financed his early political career. Giving up poker on becoming President and having to turn elsewhere for him money may have been one where for pin money may have been one factor in the Nixon downfall.

Nixon was a puritan who played poker for self-Improvement. Dwight Eisenhower played a dull game, as a form of social interaction; characteristically, he took the trouble to see that junior officers were not hesvily out of pocket:

Illegal moves

Harry S. Truman was a great poker, for gain. Poker was an important safety valve and a key to his remarkable emotio-

nal stability.

His decision to drop the atom bomb on Hiroshima and Nagasaki was followed by days apparently devoted entirely to poker and, his playing style was very different

Nixon played with routhematical preci-sion while Truman based his play more on psychological analysis of his opponent. In neral, a common element in most games is the opportunity they provide for person-to-person confrontations.

Viewed, from this angle, games would appear to bave little to lear from automation, despite it being relatively easy to construct a program simulating a human

opponeot.
Playing against a machine satisfies quite different psychological needs from playing against another human being.
This is illustrated well in Napoleon Bonaparte's celebrated 1809 eacounter with

Kempelen's somewhat fraudulent mechanical chess player at the Schoenbrun-

Palace in Vienna. During the first game, Napoleon made a deliberate series of illegal

The automaton corrected the first two moves and made its reply hut on the third occasion the "turk" apparently lost his temper and swept all the men off the board. This delighted Napoleon, who thought himself elever to liave unnerved a

thought himself clever to have unnerved a machine.
On this occasion, it was Johann Allgaier, possibly the best Viennese cheas playar of all time, who was secreted within the Box.
Secure in Nopoleon's bellef that he was playing an automaton, Allgaire inflicted a severe defear on the emperor? I have oever discovered how Napoleon rock his defeat, but one can be confident that he took it better than he did on the rare occasions when a member of his court beat him. Napoleon's reactions to automata and those of his contemporaries are similar to

those we observe today. Schoolchildren and generals alike find it easier to accept correction from a machine than from n teacher or an adjutant.

Being able to play against machines in ears that many games can become puzzles in which the player challenges himself as much as anyone elso.

Freudlans: will see Master Blaster, calls pn and stretches stimulus-response Ricetronic Masternand, Boris and Sensory skills which are deeply imbedded in man's Chess Chailenger as masturbatory instruments, but the same people would see in In time of war, it is these skills, give or cest and sexual felgidity in a Coupe take a little natural cumping, which have determined survival in the past, whether

Keeping in trim mentally or physically should never be despised. Although computer games may not make very attractive opponents, they can make ideal aparring

partners.

Leaving Freud on one side, computers space for table tennis are more like brains than bodies and it is provide better practice i rather surprising that computee tech dination than today's nology makes its greatest impact on physi-

cal rather than mental games.

Over the millenia, thinking man has been evolving but he has a long way to go before he superaedes action man. As a plece of computing machinery, man is more impressive on the ice-hockey rink or

the Centre Court at Wimbledon than he is

in the classroom or the laboratory. **Key factors**

Most games can be played at a variety of levels lut it is not the intellectual content of Space Invadera which initially disorganised and eventually revitalised the Japanese coin-op industry to the extent of some £300 million within a year.

What gave Space Invaders its obvious punch? Novelty, being the in-thing and a brilliantly orchestrated publicity campaign were important components, as they were with Othello.

Different but of equal importance are its

dynamic display and contemporary spaceage theme. All these are key factors determining the scale of Space Invaders

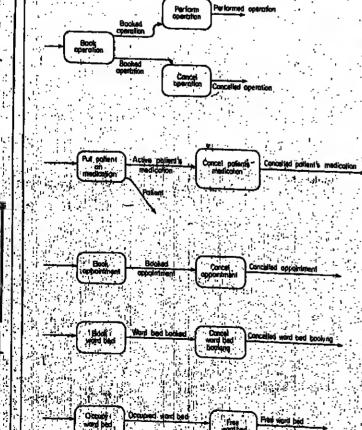
What determines the success or perhaps the social importance of this type of game? Space Invaders may allow one to identify with Superman, with the Melkon ruling the universe, but its real appeal lies in the intense physical involvement which it generates erates.

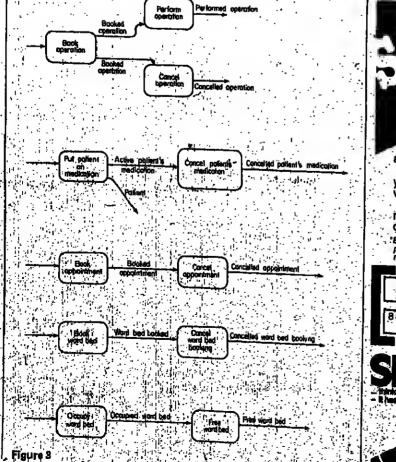
Space Invaders is porn with feelies. It

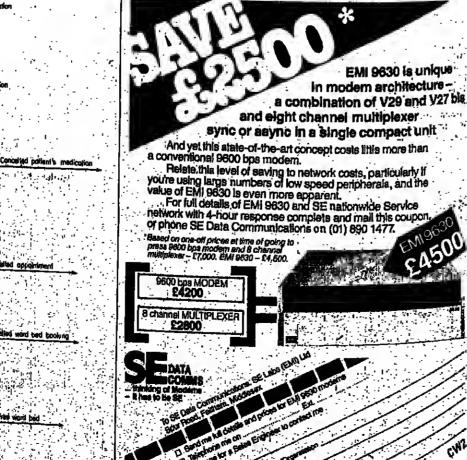
determined survival in the past, whether he were a private, a pilot, a pikeman or a

Computer tennis and football are no substitutes for the real thing but when fewer and fewer families have dontestic space for table tennis or billiards, they provide better practice in hand-eye co-ordination than today's roain sport









by Roy Atherton

Structured programming and methodical problem

enalysis are based on a few aimple concepts which can

be expressed in simple and natural ways, and words

like DOWHILE and DOUNTIL are unnecessary obomino-

tions, says Dr Roy Atherton. Here he argues three points: thet there are just e few simple concepts which era the essential elementa of both problam anelysis end program structure; thet there are just three correct

relationships batween these essential elements; and

thirdly, that once these few ideas are understood the

analysia of e problem end the writing of a well-structured program are almost the seme process.

et Bulmarshe College of Higher Education, Reading.

The euthor is heed of the computer education centre

PRODUCT NEWS INTERNATIONAL

Linking controller

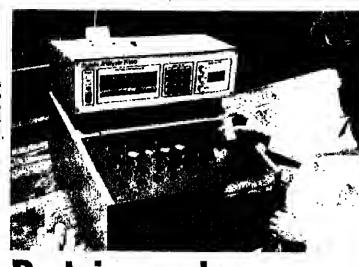
CONTROLLER that links Shugart Technology's ST-506 micro-Winehester disc drive to host computers using the geocral purpose interface huo (GPIB), is available from Microcomputer

Systems Corp.
Called the MSC-9305, its first application will be in systems in-eorporating the ST-506 disc drives and the HP-85 desktop computer. It enables systems designers to prepare applications software in the Bssie language, and permita through testing of incoming disc

Each controller controls one ST-506 Winchester disc drive. The drive will be integrated, along with the host computer, ioto dcok-sized dedicated systems for business data processing, scientific and inin applications.

Self-diagnostic commands of the controller are claimed to reduce he time needed for troubleshooting, maintenance and repair. It costs \$700.

Microcomputer Systems Corp (CW), 432 Lakeside Drive, Sunnyvale, Californin 94086.



AT THE CENTRE OF EUROPE'S BIGGEST & CONCENTRATED

Protein analyser

AN INTELLIGENT protein analyser has been introduced by

Called the Ploo, it is a microprocessor-hased Nuclear Magnetic Resonance (NMR) spectrometer. The instrument uses pulsed NMR with an aqueous "relaxation reagent". Relaxation rates are measured and correlated with protein content, which is then displayed on the LED. A thermal

COMPUTER MARKET

BRUSSELS, May 5-7, 1981

Europe's leading showcase for

minicomputers, peripherals.

the majority consisting of

directors, managers, data

terminals and microprocessors

to the 1980 event. Visitors came

from 15 countries worldwide with

attracted nearly 6,500 trade buyers

hard copy record.
Samples are measured in 20ml plastic tubea. They must be finely dispersed, although not necessarily

The UK price is £7,000.

Newport Instruments (CW), Blakolaada North, Miltoo Keynes, MK14 SAW. Tol: Milton Keynes (0908) 613691.

Compec Europe 181 is sponsored by:

PROCESSING and PRACTICAL COMPUTING

with support from the leading Dutch

the world's leading computers

publications COMPUTER WERKLY.

SYSTEMS INTERNATIONAL, DATA

publication COMPUTABLE.

Block-mode CRT display terminal

A 8LOCK-MODE CRT display terminal has been introduced by Hewlett-Packard, Called the HP 2624A, the model is elaimed to fill the gap between the character-mode HP 2621A and the receotly troduced multi-connection HP

The terminal's editing and formattiog features are claimed to im-prove data integrity and increase votem throughout by preventing

Reduced price learning module

HAWKE-CRAMER is aupplying the Texas Instrumenta University Learning Module at the reduced price of £149 + VAT. Called the M 990/189M, it has a 45-key alphanumerie keyboard and a 10 di-git, 7 segment display with a 64 character huffer.

£1,510. Howlutt-Packard (CW), 308-314 Kings Road, Reading, Berkshire, RG1 4ES. Tel: Reading Hawke-Cramer (CW), Hawko House, Green Street, Sunbury-ou-Thames, Middloaex. Tel:

Destructor

A MACHINE for destroying microfilm has haan intro-duced by Buainass Alds Called the Scimitar Mierod astructor, it raduces film to a fina dust, scuffing the amulaion off tha film be-

fore euiting.

Dastruction apaad is \$40 flehe per hour, or \$8.4 inches of film par minute. All film, including polyester, dlazo, vesicular and X-ray can be dastroyad.

Buainasa Alds (CW) 3 Whitby Avanua, London, NW10 7SQ. Tel: 01-865

Door lock

national character seta (English, French, German, Spaniah, Swe-diah/Finniah and Norwegian/Dan-AN ELECTRICALLY-operated stronger door lock has been joiniab) costing £55 and a matha and duced by Clarke Iostruments. Called Model 915, it replaces the large character set also priced at fabricated Type 8093 series. It costs £45 plus VAT, with Tbe display terminal coata

discounts on questity orders.
Clarke Instruments (CW), 91A
High Street, Camberley, GUIS
3RN. Tel: 0276 27105.

Portable logging system

A SOFTWARE programmable the instrument can function as a multichannel data logging system is available from Microdata.

ter of several data-acreening tasks.
Tho HP 2624A features user-de-

finable, screeo-labelled soft keys

tional. This means that large data

entry forms, long listings or

programs can be accommodated.

half hright, underline, blink and noo-display in any combinatioo. Opuono include the integral

printer, whielt costs £631, addi-uooal display memory for £110,

terminal has inverse video,

and a standard memory which will store four pages of 80-character lines. Five additional pages are op-

portable and powered from in- capable of carrying 40 modules, ternal recbargeable batteries. Employing Mierodata's input interface, the system can accept up to 100 mixed analogue and digital input signals from a mixture of any

types of transducer in common The mainframe unit accommo-tates 20 plug-in modules, an that Why?

quisition oystem in a single hous-Called Prolog, the system is inteoded for use in automatic data acquisition over a variety of indoor and outdoor applications. It is the use of two add-on units, each giving a maximum of 100 chen-

dates 20 plug-in modules, su that WD7 8JX, Tel: 09276 3141.

Micro-based fault finder

AUTOTEST, the microprocessor-based data communications fault finder has been relaunehed by Macwell Systems.

Winchester backup tape drives

A FAMILY of atreaming .25 incb eartridge tape drives with a recording density of 8000 bits per ineb is available from Archive recovered the data logging account and sudio monitoring, including Transmit and Receive carrier dBm displays. It constitutes

Corp.
Designated Sidewinder, the drives are designed for Winchester disc drive back-up. They are available with either a basic or intelligent configuration, with 10 megabyte or 20 megabyte capacities.
The crase-write-read recording The erase-write-read recording head operates in a two- or fourtrack format, the tracks being recorded serially one at a time. The basic modela cost \$469 for 10 megabytes and \$600 for 20 me-

\$823 for 10 megabytes and \$954 Archive Corporation, 3,540
Cadillac' Avenue, Costa Mesa,
CA 92626, USA. Tel: (0101-714)

641 279.

Archive Corporation, 3,540
microcomputer video screen, disc
packs, graphics tablet and A3 personal computer piotter.
A design can be drawn on to the

Matrix printers

A SERIES of bidirectional dot matrix impact printers is available from Techesport.

Called the DIP Series 80/Matrix Data Impact Printers, they feature a 7 x 7 or 14 x 7 bidirectional dot matrix, with a printers, and of matrix, with printout speeds of 100 characters per second. They are offered with friction or tractor feeds and provide a Centronics compatible parallel interface, and RS 232C or 20 milliamp current loop serial interfaces.

Using ribbon cartridges, the painters are; fancooled and can poctate a 100% duty made. They

Using ribbon cartridges, the calendars feature computer the calendars feature computer week and day numbers. Computer week and day numbers. Computer week and day numbers. Computer feed outs can be recorded on to the feed outs can be recorded on t

Called Autotest II, it is based on the 6802 MPU and is available in two case atyles, either as 19-inch rack mounting or in a portable in-

strument case.
Features include a 20 character per line printer, time of day and elapse time clocks, V24 snapshot facility when errors are detected, remote data logging access via RS

£1,480. Macwell Systemo (CW), The Maltingu, Sawbridgeworth, CM21 9JX. Tel: (0279) 725650.

Pad to plotter

A PAD to plotter system (PPS) available from Personal Compu-

The system enables the user to generate a finished accurate or scale drawing chart, graph, map or plan. It comprises an Apple II 48K

the system and altered vis screen, or reproduced through its personal computer plotter. There are 16 pre-defined shapes, which may be stored in the system.

It costs £3,250.
Personal Computers (CW).
194-200 Bisbopsgata, London,
EC2M 4NR. Tol: 01-626 8121.

Users' calendar

A YEAR planner for computer users is available from Letts.
Called the Plan A Year range,

simple for schools articles trying to show that structured programming is impor-tant for schools and colloges as well as for the computing fraternity in itself as you do o "natural walk" around the tree.

Figure 1. The hard way to exploin a REPEAT/UNTIL loop

Keep structured

does get wider with languages in the Fortrao/Basie traditioo. Writers like Hugh Williams' and Sydney Leleux' have tried to show ow one should think, analyse problems and develop a program design using these ideas, and only micism and inelegance which the writers would probably criticise in as a final otage encode in Basic.

programming

Complex

So far so good, but some of the above-mentioned articleo give what the present writer feels in an unnecessarily complex view of things. For example, if the ideas are truly aimple why are they ex-plained in terms of flowcharts? The whole point of a decade's development is that flowcbarting and GOTO statements are machineoriented things, uonatural and largely unnecessary. Now, it isn't very hard to uoderstand the flowchart shown (figure 1, from Structured Programming2\ though it seems a shame to make people read carefully to find the meaning of A, F, T, and C. And how do you procounce DOUNTIL? The idea behind this is simply a loop' with exit when a certain condition

becomes true: REPEAT

coding use the same concepts and solution, so that from the very beginning pupils can become explicitly aware of just those ideas UNTIL (condition becomes. which they have always needed.

Three points will be argued:

Firstly, there are just a fews—
about half a dozen— simple

(sequence of statements)

or as a rugby league player might REPEAT

put one foot in front of other UNTIL tackled.

Sometimes one wishes to construct a loop to provide for the possibility of the sequence of staterelationships between these essential elements. Thirdly, ooce these ments not being executed at all.
The rugby player might receive
the dreaded "hospital pass" which
arrives at the same instant as a
hard tackle. The WHILE conatruct allows for this:

WHILE you are not being

put one foot in front of other

As Niklaus Wirth and others have observed, this is a more general type of loop and a powerful

WHILE (reason for looping)

ENDWHILE

This is perfectly true, but it not a reason for ignoring the RE-PEAT/UNTIL roncept which is more natural in some situations and n little easier to use.

In a computer context one has to be careful and precise but the ideas can be presented in a simple way. It is said that Niklaus Wirth observed with growing dismay the increasing romplexity of the Algol 68 specification as his committee colleagues put more and more of their very clever ideas into it. He went away and invented Pascal

A further major simplification occurred from 1975 to 1980 when Borge Christensen, a great teacher as well as a scholar, achieved a combination of power and simplicity with Comal: the power of Pas-cal's structures combined with Basic's simple syntax and easy

The result in that Comal is both a imguage for problem analysis (what some people call pseudo-code) and an elegantly simple pro-gramming language. Moreover, it is designed and implemented (on

is designed and implemented (On SPC/I and RC Piccolo machines) as an extended Basie. So teachers and pupils will find it easy to move from Basic to Comal if and when their systems will allow it.

In Denmark, children in their early teems write well-structured programa in Comal. The explicit use of the six program elements and three relationships in the lan-guage has greatly facilitated their use in analysing problems.

The writer has experienced

ease with which the analyses problems can develop on the

fluwcharts. He ean also report that his students find Comel a delight to use. It helps to reduce to a minimum what Dijkstra calls the ronceptual gap between the statie program (spread out in text space) and the dynamic process (spread out io time) of the program's exe-

cution.

The six essential elements of program structure are:

FOR loops REPEAT/UNTIL loops WHILE loops
1F/THEN/ELSE decisions

(hinary)
CASE decisions (multiple) PROCEDURES

(closed subroutines) The essential relationships are: Sequential (one thing after another)

subordinate (nested structures)
procedure calls (modularity)
Comal-80 provides for automatic indeptation to help the programmer to read his program easily and to be sure that every structure has been properly opened and closed; Last, but by no means least, long (or short, if you insist) variable names are allowed to make the meaning of Identifiers clear. A good implementation would also force keywords into

Tree

upper case and user words in

lower case (or vice versa).

There is a good deal more to be said. Only loops have been discussed in any detail. Decisions and modularity can be treated in equally simple ways. More needs to be said about graphs of algorithms; if flowcharts are out, what visual representation is possible.

The answer is again beautifully simple: a well-structured program is either a tree or a group of trees, and it can be represented as such so that the program elements and relationships are presented visually. Moreover, the "levels" is the tree correspond to the indent ing in the program and if you are one of the few people who honestly does draw his flowchart or other

diagram first, then you can be sure that the program will almost write quite know why (or even whether quite know why (or even whether) his program works. At worst the program becomes so knotted that it is abandoned, and the pro-

GOTO statements. They are necessary to these extents. 1. In a structurally deficient language (eg Basic, Fortran) the GOTO must be used to simulate missing structures in even the best-designed programs.

A word must be said about

2. Even in structurally correct languoges like Comol and Pascal, the GOTO statement is occasionally the cimplest way to do something, such as exit from a nested structure on an error condition to abort execution.

However, it must be added that in the teaching of problem analysis, using Comal or some similar pseudo-code, GOTO conatructs need come only very late in most courses. It is regrettable that they must be used in the setual Basic programs at rather earlier stages. They are extremely easy to misuse: they can and do eause much mouble.

Tangled up

· In the tree-structure of a good program the GOTO statement is occasionally a necessary rope to get to the ground, or perhaps to another branch or another tree, by a simple quick method. But if it is used freely it can get the program and programmer so tangled up

grammer may then think he is not very skilled and become demou-

Finally, how can one convey the sesthetic quality of a wellstructured unalysis of a problem vithout having first explained all the concepts in detail? The "program" in Figure 2 oftempts to do this using the actual keywords of Cornal. The writer has found it a eseful device for talking to a ooospecialist audience about program-

ming and problem analysis with-out actually doing it. But actually using Comal and developing one's teaching ideas with it is comparable to the experienee, which most readers will appreciate, of acquiring one's firs computer or learning one's first eomputer language: a combination of excitement, achievement and fun. That io the real significance of structured programming for

1. Effective Techniques for Program Design in Basic, H. Williams, Educa-tional Computing, Vol I No 3. April,

1980.

2. Structured Programming. S. A. Le-leux. Computers in Schools, Vol 3, No 1, MUSE. September 1980.

3. The Complete Pascal. S. Bleen-bach and C. Sudier, Personal Compu-

Football manager's approach to problem analysis and the stored program concept

A PROGRAMMER's job is something like a footbell manager's. The manager must inculcate certain concepts into his players so that when a game nearts they play good football without further interfer-

when a game starts they play good rootes if without ruther interference from him.

His job is to analyse the problem if cotball) and formulote a set of rules for play, after which he mest "program" his players with thace rules by training and coaching acestors.

The following "program" is based on a somewhat simplified analysis of the game, it is in some ways more specific than a coach would be but its purpose in to illegarate good problem analysis using fundamental concepts which will be discussed later.

REMARK Football Managar's instructions to his Players.

FOR half ** one TO two

WHILE the ball is in play
if opponents have ball THEN
play in defensive positions
ELSE

REPEAT pass safely to team-mute UNTIL good attacking opportunity occurs EXECUTE attack

CEDURE, attack If you have the ball THEN keep moving forward or ELSE

Closing Keyword UNTIL PROCEDURE

Figure 2: An ettempt to convey this sesthetic quality of a well-structured malysis of a problem without having first explained all the concepts in detail, esing the actual keywords of Comai.

cal the gap between the two processes is no wider than some tivial points of syotax, but the gap Robots aid the ailing Chrysler manufacturing is cosmetle changes. With fixed automation, you have to install new machines

general.
This is both laudable and

mtural. It is a consequence of the

nowth of understanding and wareness, during the 1970s, of

ensible programming techniques

and styles.

The whole development is of

course supported, and perhaps symbolised, by the rise of Pascal. But there are unfortuoate residual

impressions of abstractness, acade-

a computer program.

Have they seemed to ouggest with loss of little flowcharts that

we are talking about something fussy and pedanue? Have they

urned people off by talking about the Jackson upproach using the design of data files? Is it really

necessary to invent on propagato

some of the ugliest words writted in the language which computing there with Milton and Shakes-

Abominations

The hypothesis of this article is

that structured programming and methodical problem analysis are

based on a few aimple concepts which can be expressed in simple mai actural ways. Words like DOWHILE and DOUNTIL are

onecessary abominations.

further, if things are treated mutally and straightforwardly there is a mergiog of skills. Problem salysis, the development of

logorithms, program design and

concepts which are the essential

dements of both problem analysis

and program structure. Secondly,

there are just three correct

few ideas are understood the

Willion of a well-structured

program are almost the same

In a language like Comal or Pas-

CHRYSLER Corp recently completed installations of 130 Unimation's 4000 Series Unimate reports in two of Its of welding robots in two of Its of welding robots in two of Its of welding robots in two of Its of welding. The remaining four are Unimation's 2000 Series reports and a half-years, constitutes the image, single order of industrial robots in the US.

Sixty-five of the Unimation robots were installed in Chrysler's Newark, Delaware plant, and the other of welding, but in places where there is less room on the assembly lines for additional machinery.

Laid off

Laid off

Chrysler before the company has laid off workers, closed plants and dropped fixed-cost projects in an attempt to keep its corporate head above the company hopes will boost its alling out, and the last robots were spread the chrysler station was not less that are very good for now the sessently line.

Chrysler has less

every time you make a change. But with robots, you reprogram them. And when you bring in new robots, you can program them so that they are co-ordinated with tho older machines,
"Our Newark plant stready had some robots, if it had been equipped with fixed automation, those machines would now be on

above water.

The welding robots will perform about 98% of all spot welds on the new cars. On sedans, there are some 1,736 spot welds to be made; the Chrysler station wagons recive some 1,656 welds.

According to Chrysler, the company intends to use even more robots in the future. The main advantage to using the machines is the other two major US car manual that they are programmable, it that they are programmable, it is respectively that year.

buts respectively that year.



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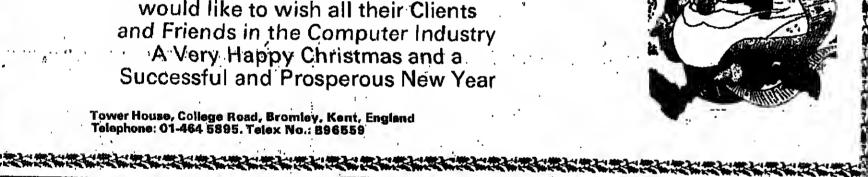
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Age 26+, Minimum of 3 years' expensione in on-line commercial data. Processing including Applications Analysis and Programming, using Basic preferably on DEC PDP11 computers.

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A minimum of 1 year's experience is required on PDP11 hardware, RSTS and Basic Plus.

Please write with your CV to:

Management Control Systems

4th Floor, Bilton House, 54/56 Uxbridge Road, Ealing, London W5 2TJ.
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Bristol

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A Systems House specialising in the provision of a range of services in accountancy practices is seeking adultional staff. Two executives to support and expand Financial Packages and one in offer pre and just sales support on their Wind Processing System. Candidates for the financial package position will have 2/3 years DP background with a strong financial bias and may be qualified accountants. The word processing executive will have a genuine interest in this field and on ability to identify and solve business problems.

Contact: Bob Male

> Analyst/Programmer £6000-£9000 + benefits

Our Client, a leading Systems House marketing accounting services, have a vaconcy for an Analysi Programmer to develop new and expand existing Financial Packages. A knowledge of DEC hardware, Basic and RSTS will be reliable but the services of the control of th valuable but a thorough understanding of financial applications is essential.

MVS Expert

Birmingham

£10.000+

Our client is a large, multi-national arganisation with extensive and advanced computing facilities. The hardware and software involvement is technically very challenging involving an international network, several mainfrances and large IMS data bases.

A senior vacancy now exists for a specialist with managerial ability to take responsibility for the systems software function. The job will call for a high level of technical involvement as well as some international travel.

Applicants should hove a solid technical background based on large IBM mainframes with specific experience of the MVS operating system. Familiarity with JES 3. TSO and IMS would be an added advantage as would a knowledge of French, German or Italian.

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Senior Systems Analyst c. £9250 + Paid Overtime Kenilworth

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Our client, one of the foremost finance organisations is looking for a confident, self-starter to join a team in their Computer Audit Department. Applicanta will have had 3/5 years experience in analysis preferably associated Applicanta will have had 3/5 years experience in analysis preferably associated with IBM hardware. As well os independently auditing current systems, the successful applicant will be expected to provide aystems assurance on a variety of developmenta including Data Base, On-Line and Communications Bystems; knowledge in these areas is advantageous. A skilled communicator with an ability to produce concise and well written reports will find significant promotion prospects within the organisation. Normal finance sector benefits together with relocation assistance are available.

Contact: Christine Pountney

Senior Programmer

An engineering organisation, forming part of a larger international group, in seeking a Senior Programmer to play a leading role in a major eystems development programme. The installation is technically up to date with opportunities to be involved in projects using data base, on-line and

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Contact: Bev Stevens Contact: Bev Stevens

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Contact: Isobel Bruce JCL, is essential.

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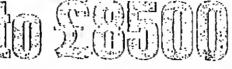
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COMPUTER WEEKLY

CHRISTMAS PUBLISHING **ARRANGEMENTS**

The next issue of Computer Weekly will be published on January 1, 1981, and all copy for classified advertisements should be received by 10 a.m. Tuesday, December 23

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HARDWARE TECHNICAL SUPPORT ENGINEERS

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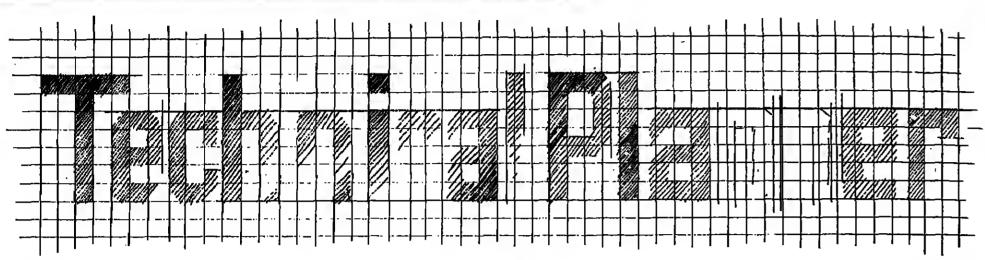
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management

early, sitting behind an empty desk in your new and unfamiliar office, wondering if well, that philosophy may be all right for autogratic hridegrooms, but it doesn't do a lot for the long-term surenemies, characters that took vival of the manager or his so long to get to know, now left behind in the cause of per-

Ruthless

strangers waiting to put you The main disadvantage of leaping into action soon after arrival is that one inevitably ment arrival is a difficult part to play. For a start you hardly does so without all the facts know any of the rules of the One can easily confuse logic game. Okay, you've got a job-specification (if you really got with the way things really ore.

To draw conclusions in the uckyl) and they told you at first days or even months is to the interview what was exattempt to solve a partly pected of you.
You probably know the market, the industry and the job function; otherwise it's stated problem with a small proportion of all the factors involved. Of course, there is a time in

unlikely you would have been the life of all managers for acting in a ruthlessly objective The product? Well, that's something else. Chances are ity of every manager to make your knowledge is fairly superficial, a general appre-ciation gained as a competi-tor, and your subordinates business decisions rhat are devoid of sentiment. He must be able to tackle the "Gordian Knot" in the time-honoure manner; but only when the ume is right. There is only game es your technical one right time and that is when one has fluency in all the factors involved; seldom on overnight process.

Yet you have an area of even greater vulnerability, a

total ignorance of the people who work with and for you Guideline If there's an 80/20% rule company's political mechanfor starting a new manage-ment job it is likely to state ism . . . the unwritten rules, the operation idiosyncrasics, the way things have always been done until now, the what a company is about in the first 20 months and with a strengths and weaknesses of bit of luck the next 80 months Individuals, the fetiahes, the will reveal the remaining troublemakers, the placators, the naive, the mentors, the

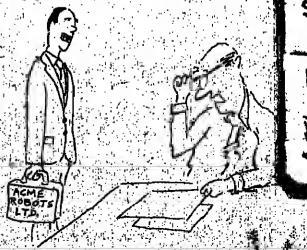
There's an old Yorkshire tenders, the followers, the as-pirants and the failures. Like saying "Hear all, say now!!". That's not a bad guideline as not you'll have a complere set working for you.

All you have to do is surt out which is which.

TRADER

ang personer creaming white sorting out the morass of operational habits and individual personalities should not be underrated. It is a considerable and unavoidable 6

task: a nettle that every new Surprisingly, to me at least. many managers cannot perceive this view of the circumstances or sea that there is any need to do anything other than "start as you mean to go on". For 'them 'the "new broom" syndrome is the opti-12 9



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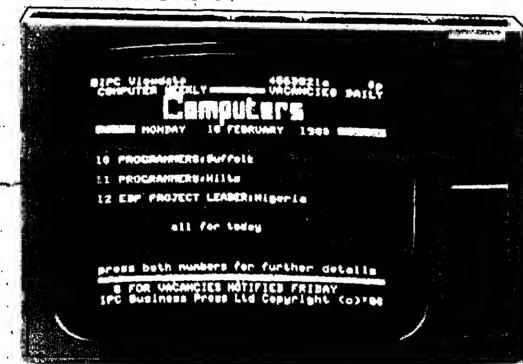
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